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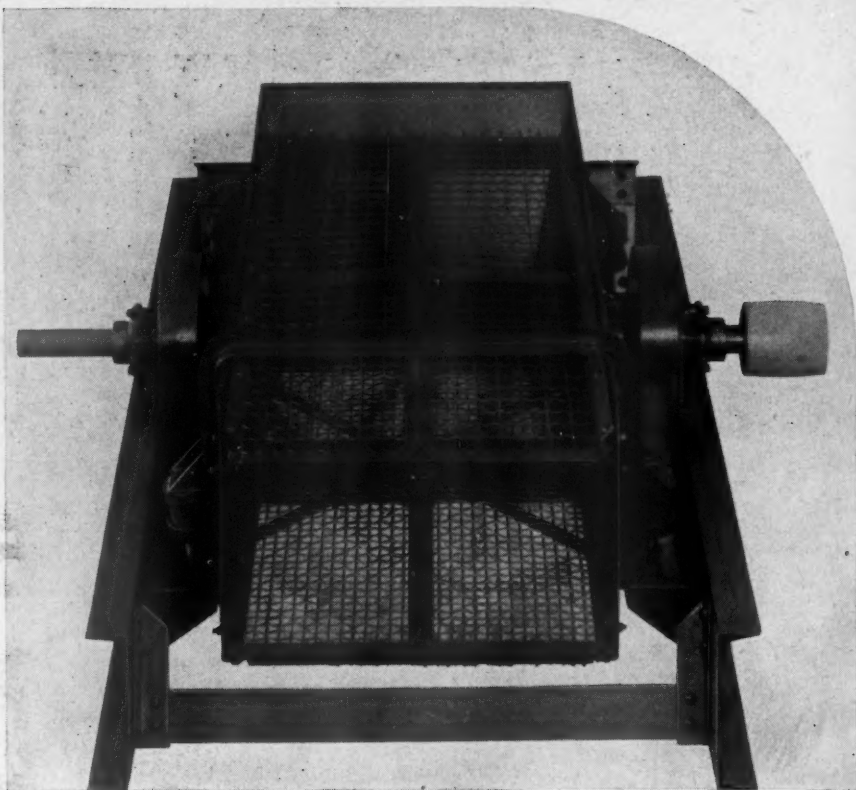
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FEBRUARY

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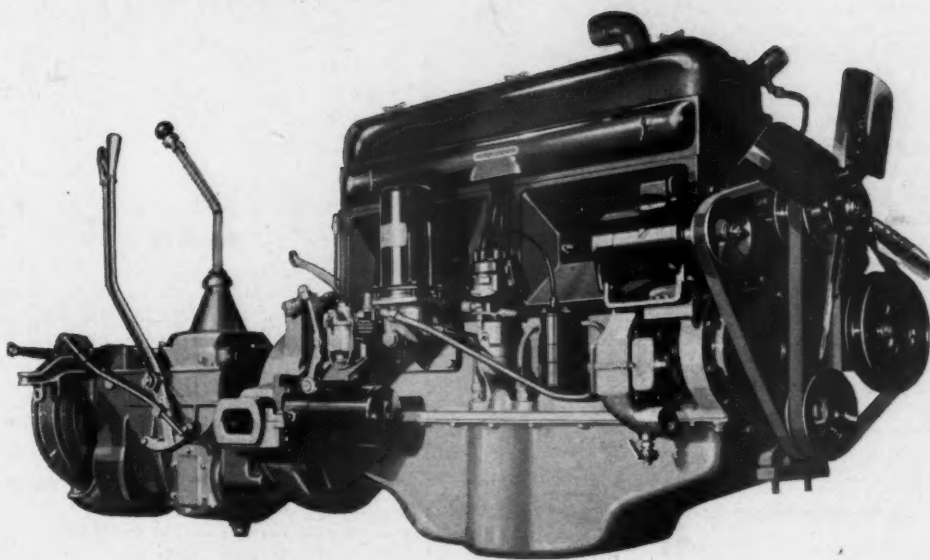


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February, 1934

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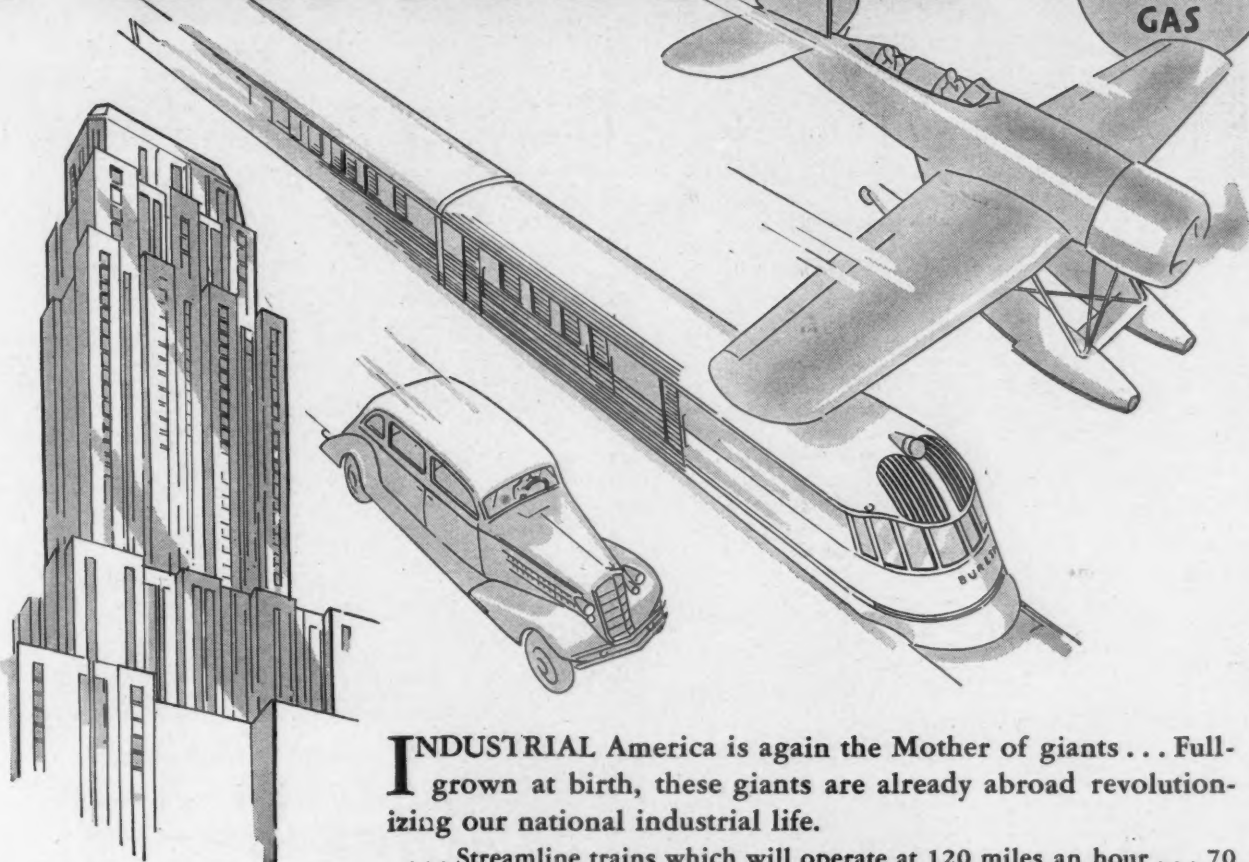
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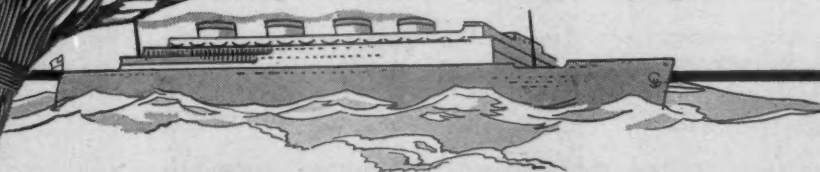
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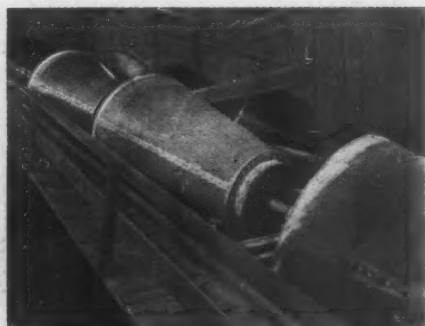


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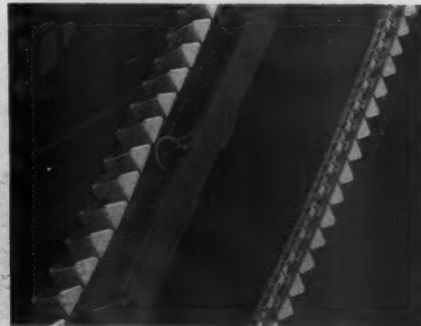
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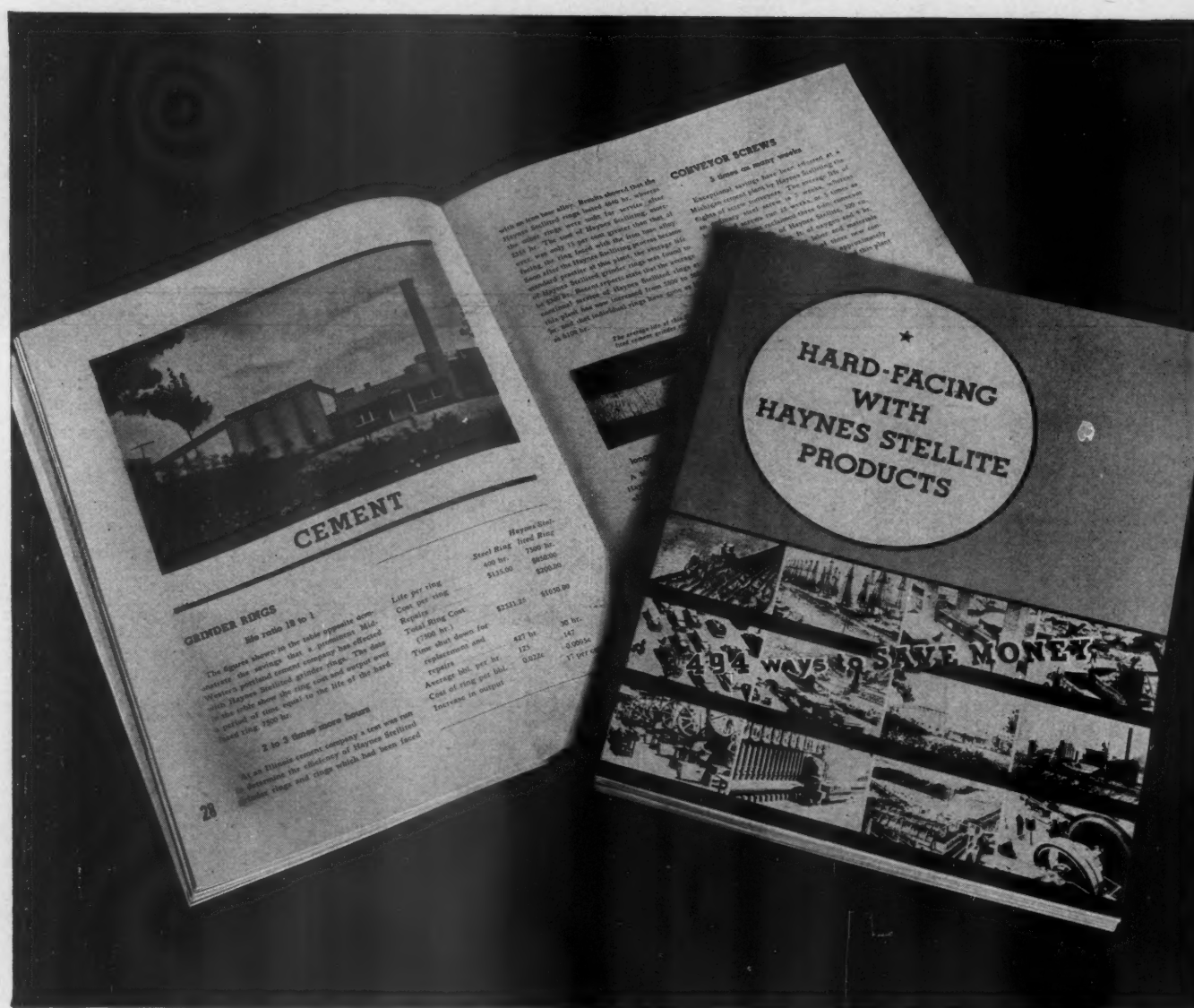
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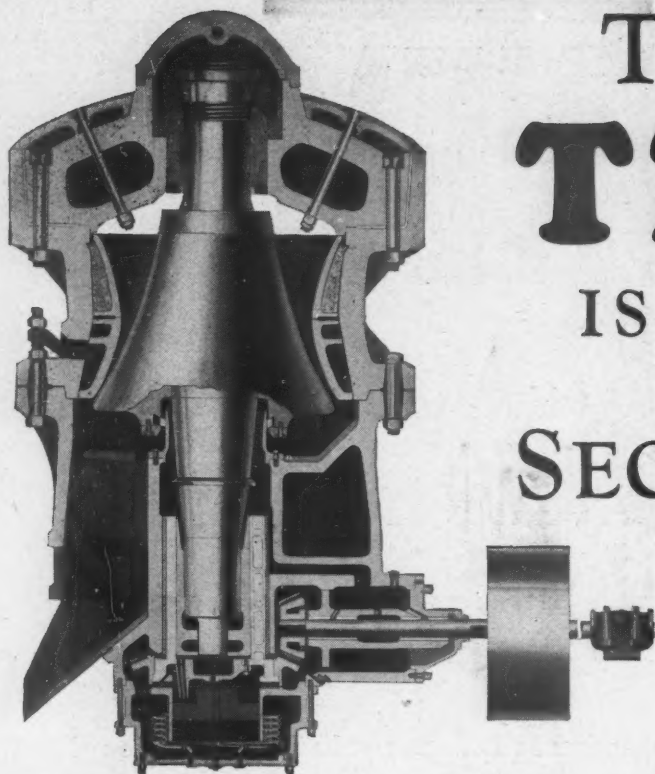


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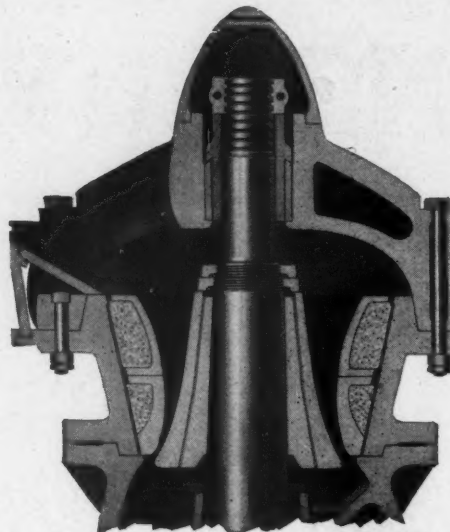
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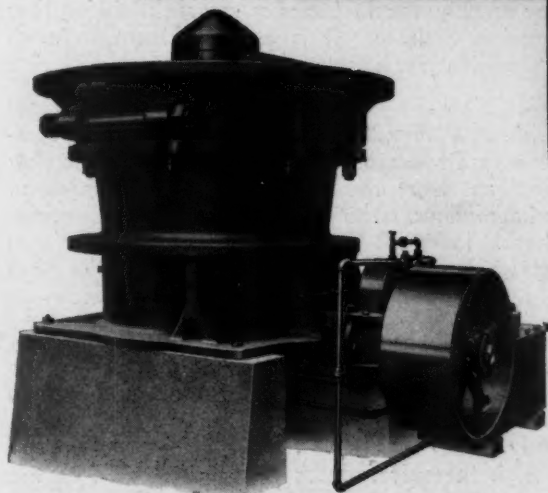
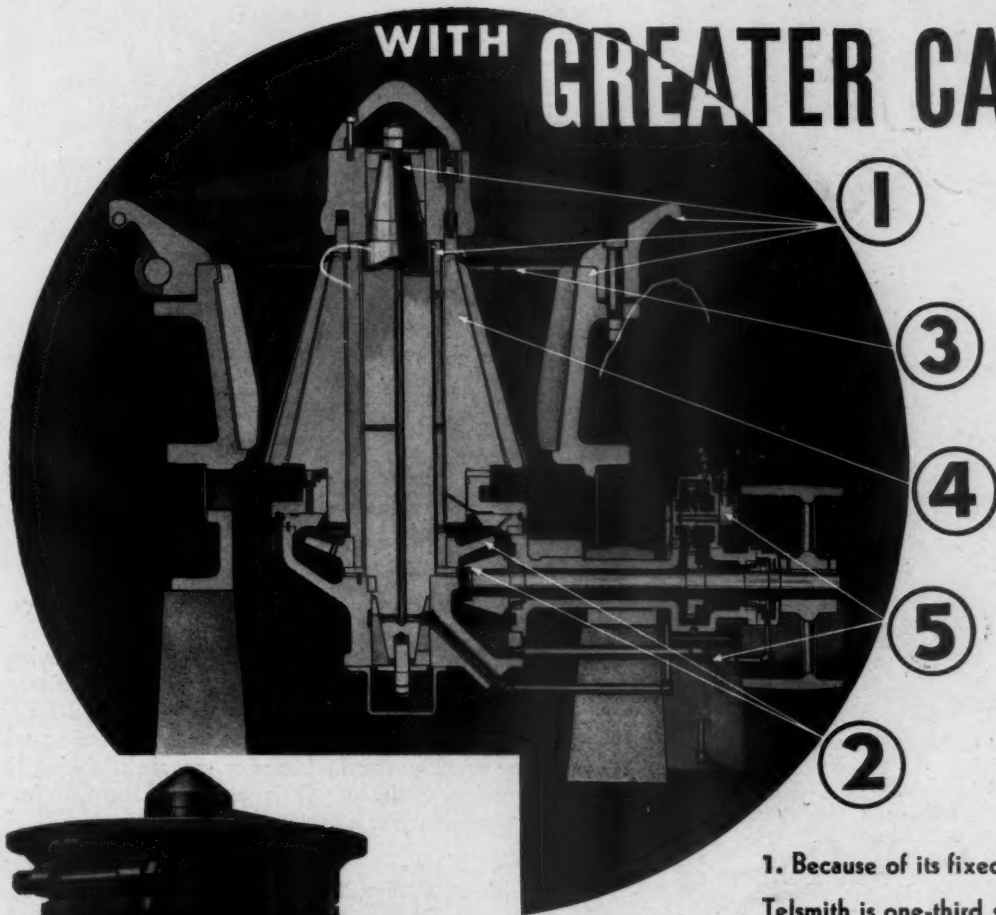
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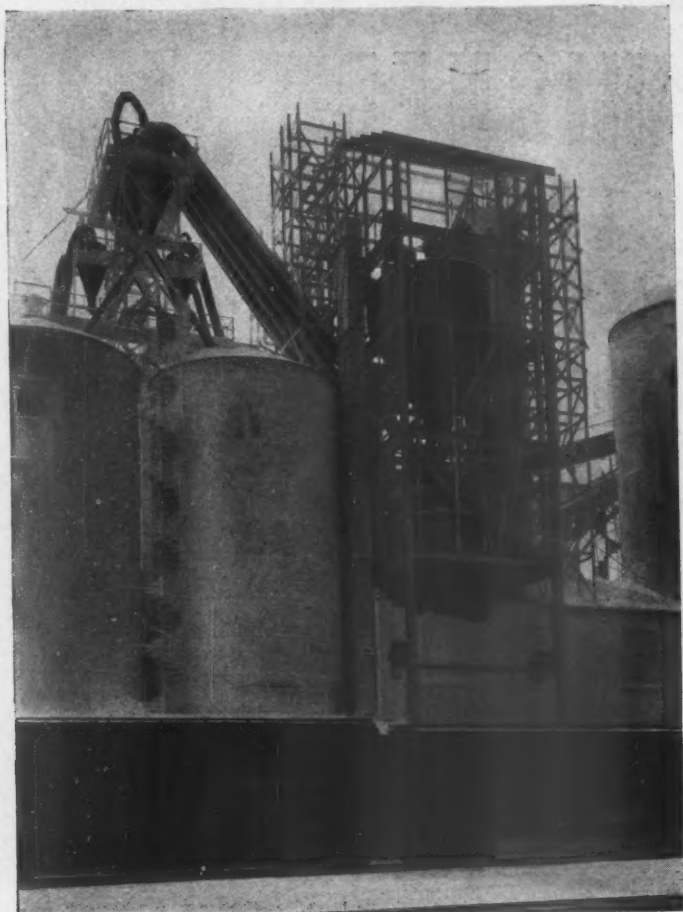
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B-28

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Sixteen pages of facts on modern methods of separating, drying and dust collecting.

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Write for catalog, "Handling Materials by Air," which gives full details of this economical method. RAYMOND BROS. IMPACT PULVERIZER CO., Main Office and Works: 1307 North Branch Street, Chicago. Branch Offices in New York and Los Angeles.

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NEW ENGLAND

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P & H MODEL 600 SHOVEL

WITH SPLIT SECOND CONTROL

SPLIT SECOND CONTROL

P&H



BACKED BY

50

YEARS OF EXPERIENCE

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Yes! it can be profitable to hook up jackhammer holes with Cordeau-

Pass one end of the Cordeau-Bickford Detonating Fuse through a cartridge and drop to the bottom of the hole. Load and tamp. Connect each hole as shown by making wrap connections with the main lines of Cordeau, laid midway between the rows of holes. Cap the end of the main line with an EB Cap or Fuse Cap—and fire all the holes at one time. There

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CORDEAU DETONATING FUSE BICKFORD

SAFETY FUSE and LIGHTERS

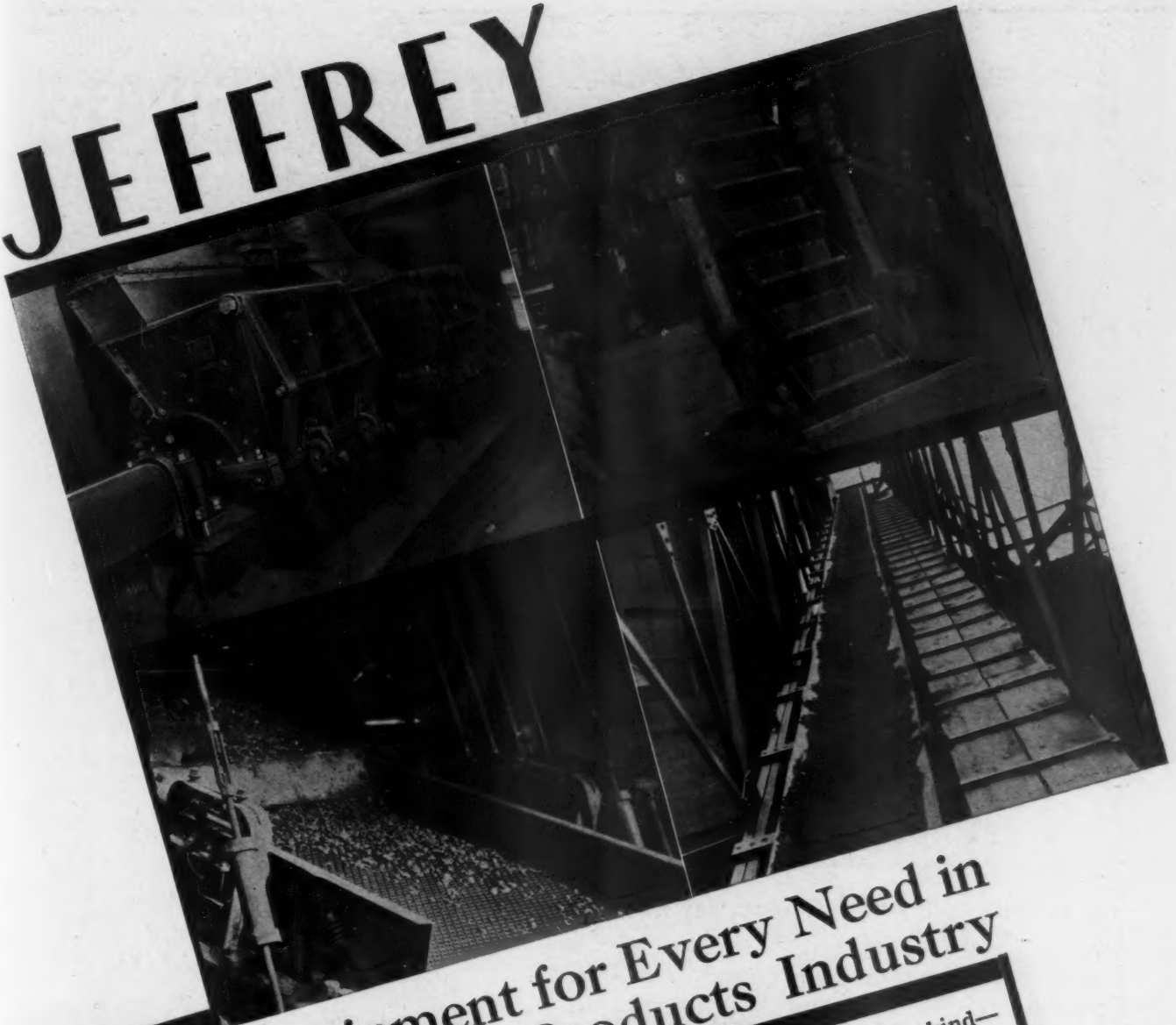
Ensign-Bickford Safety Fuse is available in a number of standardized brands, each carefully made for a particular set of conditions. The use of Safety Fuse simplifies blasting technique.

Also—there are a number of Ensign-Bickford lighters, inexpensive—and positive in action.

CB 26

THE ENSIGN-BICKFORD COMPANY - Simsbury - Connecticut

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Equipment for Every Need in the Rock Products Industry



If you have a material handling or reduction job of any kind—Unit to do that job quickly and economically—there is a right Jeffrey of any type.

All kinds of bulk material including: stone, gravel, sand, cement, lime, gypsum, and similar products are being elevated, conveyed, screened, washed, or reduced to any size—by Jeffrey Equipment. The Jeffrey Line includes: Elevators and Conveyors . Electric Vibrating Loaders . Screens and Feeders . Crushers . Pulverizers . Portable Loaders . Sand and Gravel Handling Machinery . Washing and Screening Equipment . Coal and Ashes Handling Machinery . Chains and Attachments . Locomotives . Sand Settling Tanks . Sprocket Wheels . Gears.

Our Jeffrey Engineers will be glad to solve your handling and reduction problems. Write today.

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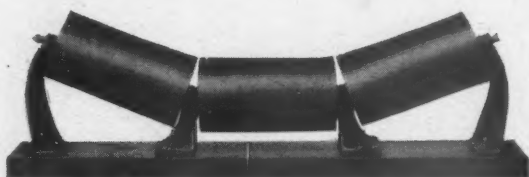
Huntington, W. Va.
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St. Louis
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PRODUCTION COST MUST BE REDUCED

THE 1934 PLANT MUST PRODUCE STONE, SAND, GRAVEL OR SLAG OF HIGH QUALITY AT MINIMUM COST AND TO MEET MORE RIGID SPECIFICATIONS THAN EVER BEFORE. THIS CAN BE DONE IN ONLY ONE WAY. ALL OUT-OF-DATE, OUTWORN, INEFFICIENT EQUIPMENT MUST BE REPLACED WITH UNITS DESIGNED AND BUILT TO MEET JUST SUCH CONDITIONS. ROBINS OFFERS YOU THIS NECESSARY UP-TO-DATE EFFICIENT EQUIPMENT.



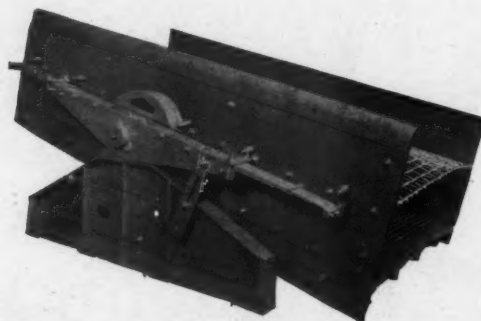
ROBINS TIMKEN TROUGHING IDLER

ROBINS BELT CONVEYORS

The belt is of our own make, exactly suited to the service. The idlers are unique, having "one-shot" lubrication, automatic adjustment of roller bearings, perfected grease seals that do not leak either way and a construction that is practically indestructible.

ROBINS SCREENS

The GYREX and VIBREX are so well known and highly regarded in the industry that their selection is a natural step in plant improvement. The GYREX Screen is offered in more than 100 variations of size, style, stroke and speed. Equipped with SUPER GYRALOY wire mesh, the longest lasting screen cloth yet produced.



ROBINS GYREX SCREEN



A ROBINS EQUIPPED STONE PLANT

ROBINS PLANTS

Many of this country's aggregate producers have learned from experience that a ROBINS plant, either large or small, is an economical plant. First cost is surprisingly low and maintenance cost is almost non-existent.

ROBINS CONVEYING BELT COMPANY

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MATERIAL HANDLING
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EQUIPMENT

**COLORADO RIVER AQUEDUCT " " STUPENDOUS
ENGINEERING PROJECT TO COST \$220,000,000 "**



**16
PLYMOUTH
LOCOMOTIVES
USED BY TEN
CONTRACTORS**



THE Metropolitan Water District of Southern California is host to one of the most ambitious engineering accomplishments of all time. Outstanding facts: main aqueduct 239 miles long; 29 tunnels totaling 91 miles; 65 miles of lined canals; 44,600,000 cubic yards to be excavated; 10,000 men to be employed for a period of six years; total cost \$220,000,000. Plymouth is proud of the fact that ten of the sixteen contractors on the job are using sixteen Plymouth Locomotives, as follows:

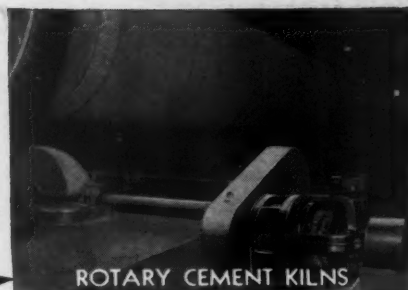
Dravo Contracting Co., Valverde Tunnel. Two 8-ton.
Hamilton and Gleason, Bernasconi Tunnel. One 8-ton.
Metropolitan Water District of So. Calif., East and West Coachella Tunnels. Four 8-ton.
J. F. Shea Co., Cottonwood Tunnel. Three 8-ton.
Hunkin-Conkey Const. Co., Hayfield No. 1 Tunnel. One 4-ton.
Shofner and Gordon, Hayfield No. 2 Tunnel. One 8-ton.
Utah Construction Co., West Portion of Iron Mountain Tunnel. Two 8-ton.
Walsh Const. Co., Colorado River Tunnel, Copper Basin Tunnel, East and West Portion—Whipple Mountain Tunnels. Two 12-ton.

Bulletin upon request.

**PLYMOUTH " GASOLINE " " DIESEL "
GAS ELECTRIC DIESEL ELECTRIC
LOCOMOTIVES**

PLYMOUTH LOCOMOTIVE WORKS, PLYMOUTH, OHIO, U. S. A.

Here's an A-C. Motor with D-C. Speed Characteristics for Your



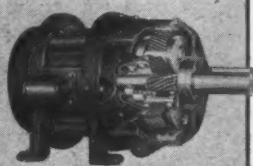
ROTARY CEMENT KILNS



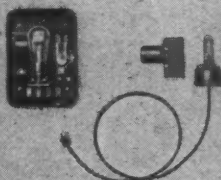
PULVERIZED-COAL CONVEYORS



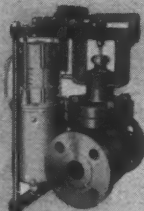
CHAIN-GRATE STOKERS



Gear-motors



Photoelectric Control



Thruster Valves



Power Selsyns

Write for complete information on these G-E money-saving equipments. They may help you improve your product and lower operating costs

FOR jobs like these—where you need an efficient, adjustable-speed a-c. motor which maintains essentially constant speed from no-load to full-load—it will pay you to look into the G-E Type BTA.

With this unique motor, you can obtain directly from an a-c. power supply the most desirable characteristics of a d-c. shunt motor, without investing in conversion apparatus. The Type BTA motor is unusually flexible—it provides an infinite number of speed points within its speed range.

Type BTA motors are made exclusively by General Electric, manufacturers of the RIGHT MOTOR and the RIGHT CONTROL for every application in the ROCK PRODUCTS INDUSTRY. Write for a copy of our four-page illustrated descriptive sheet, GEA-712B, on BTA motors. Address the nearest G-E office, or General Electric Company, Dept. 6A-201, Schenectady, N. Y.

GENERAL  ELECTRIC

020-9

"ED" AND "RED" TALK OVER THE NEW MARION LINE

**"HOW MANY YARDS
DID SHE PULL TODAY, RED?"**

"A new record, Ed . . . and I wasn't crowding her a bit . . . and is she a smooth operator . . . you should try those clutches once!"

"How is she on the swing, Red?"

"Like riding on air, Ed . . . and all controlled from the cab . . . don't forget that."

Smooth operation is assured with the NEW MARION CLUTCH TYPE EXCAVATOR due to "live" roller circle beneath upper frame—external contracting band clutches that slip without overheating and take hold without grabbing. Full control from cab. Electric lights and starting equipment standard equipment.

BULLETIN
UPON
REQUEST



SMALL REVOLVING GROUP

Clutch Drive	
Type 340	1 cu. yd.
Type 351	1 1/4 cu. yd.
Type 361	1 1/2 cu. yd.
Type 371	1 3/4 cu. yd.

Three Motor Drive	
Type 421	1 1/4 cu. yd.

LARGE REVOLVING GROUP

Type 5320	8 to 12 cu. yd.
Type 5480	12 to 16 cu. yd.
Type 5560	16 to 20 cu. yd.

THE MARION

STEAM SHOVEL CO., MARION, OHIO, U.S.A.

Electric " Gasoline " Diesel " Steam
Shovel " Gas-Electric " Diesel-Electric
Clamshell " Dragline " Trench Shovel

INTERMEDIATE REVOLVING GROUP

Two Belt Crawler Class	
Type 480	8 cu. yd.
Type 490	1 1/4 cu. yd.
Type 5101	2 1/2 cu. yd.
Type 5120	3 cu. yd.
Type 5160	4 cu. yd.

Four Belt Crawler Class

Type 5120	3 cu. yd.
Type 125	4 cu. yd.

REX CHAIN

FOR EVERY DRIVE & CONVEYOR

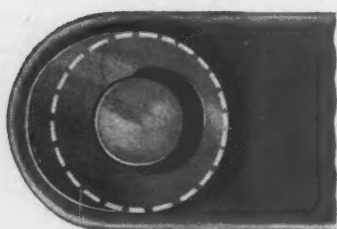
Rex Z-METAL

Where there's excess wear Rex Z-Metal Chain stops it

Where there's pounding Rex Z-Metal Chain takes it

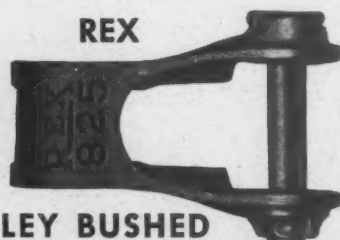
Where there's corrosion Rex Z-Metal Chain resists it . . .

The Greatest Chain Ever Cast



REX DUROBAR

The added metal on the barrel added greatly to its life—now Rex Z-Metal adds a great deal more to the longer life of Rex Durobar on heavy duty elevators.

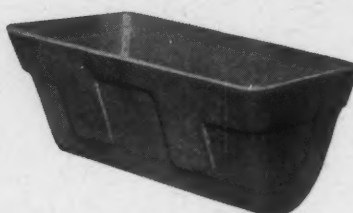


REX ALLOY BUSHED

With hardened or alloy steel bushings. Rex Z-Metal also adds greatly to the working life of this long-wearing chain on heavy duty elevators.

Send for the Folder "REX Z-METAL CHAINS"

And the Greatest Wear-Resisting Combination



REX Z-METAL BUCKETS

Rex Z-Metal Buckets, to go on these chains, will also greatly outlast malleable buckets, giving an unbeatable combination for the severe service in handling rock, sand and gravel, cement.



Running on Rex Alloy Temperim Sprockets

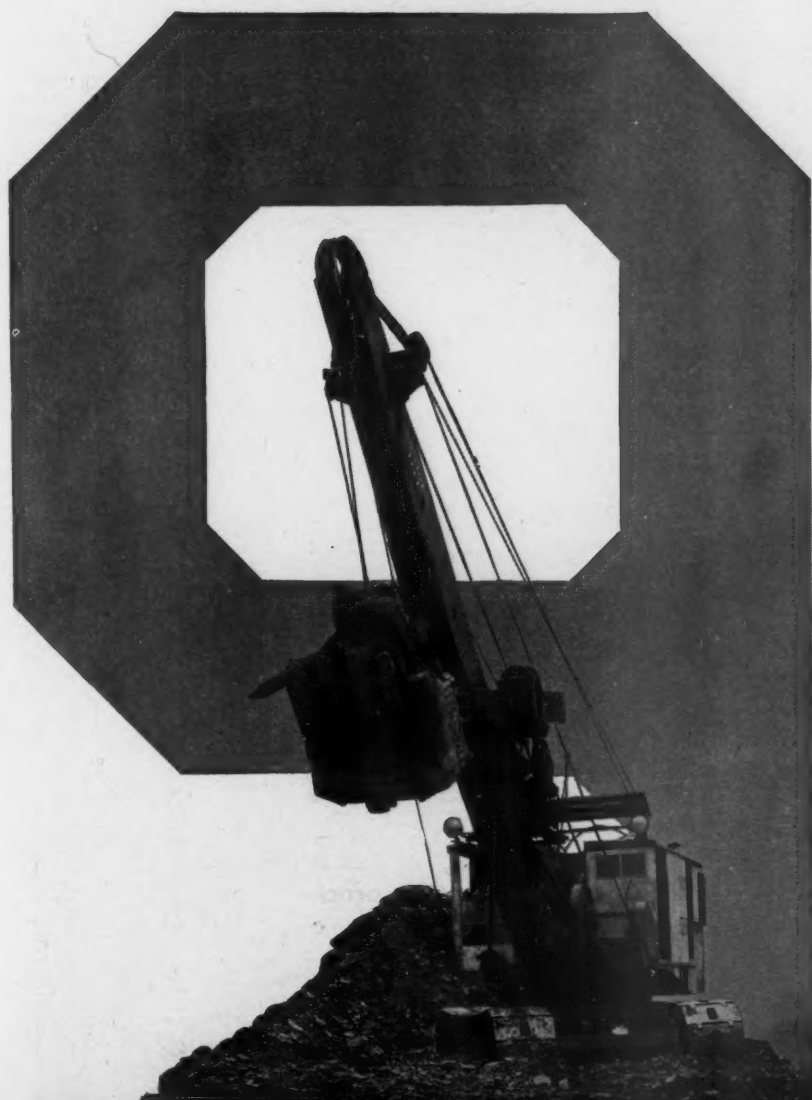
To meet the greater hardness and wearing qualities of Rex Z-Metal Chain—a new Rex Alloy Temperim Sprocket is ready, adding again to the long life that this long-lasting, wear-resisting combination will give on heavy duty service.

CHAIN BELT COMPANY

1649 W. Bruce St. MILWAUKEE, WIS.

CHAIN BELT COMPANY
CHAIN & BELT CONVEYING

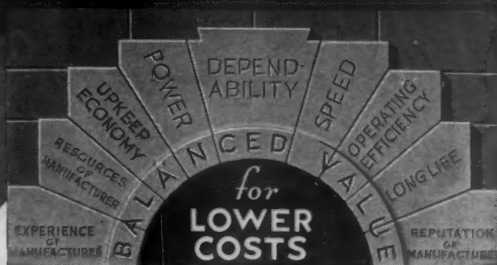
NINE *essentials* that deserve your primary consideration



See **BUCYRUS
ERIE** before you buy!

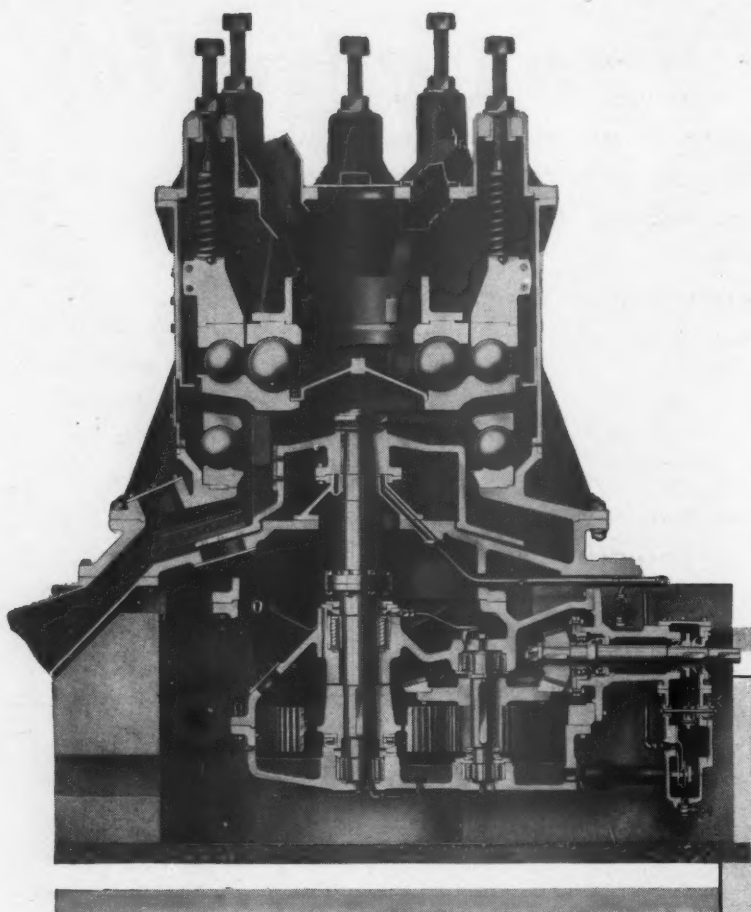
WHEN you buy an excavator, analyze each machine considered for the nine primary essentials of balanced value. Measure dependability, power, speed, long-life, operating efficiency and upkeep economy; weigh the reputation, experience and resources of the manufacturer. The machine that rates highest in all of these nine characteristics can be counted on to give you the lowest output cost and the ability to successfully bid in the jobs you want . . . and to make money on them after you get them.

When you are analyzing a machine for "money making ability" you are really analyzing it for *balanced value*. Analyze each machine with this in mind, and see Bucyrus-Erie before you buy!



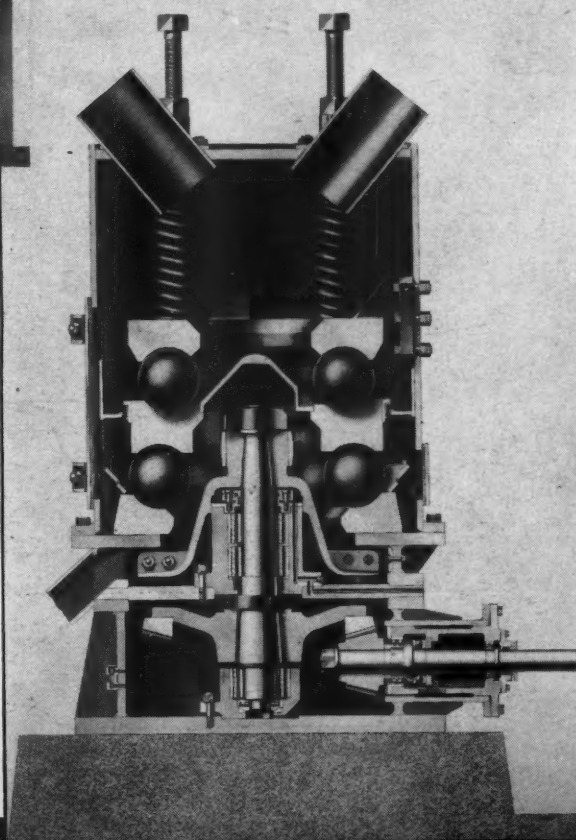
BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

The Ball-Bearing Capacity—Low Maintenance



B&W Type B Pulverizer available in large capacities for the closed-circuit grinding of cement raw material, cement clinker, and ores.

B&W Type B Pulverizer available in medium capacities for closed-circuit grinding of such materials as, phosphate rock, raw gypsum, calcined gypsum, oyster shells, commercial limestone, and chrome ore.



Principle in Grinding

Flexibility—Low Power

Babcock & Wilcox Pulverizers are available for meeting any requirement in the grinding of materials. These pulverizers operate on the most advanced principle of grinding—the ball-bearing principle—and have been engineered and are built to the same high standards for which The Babcock & Wilcox Company has become well-known in other fields.

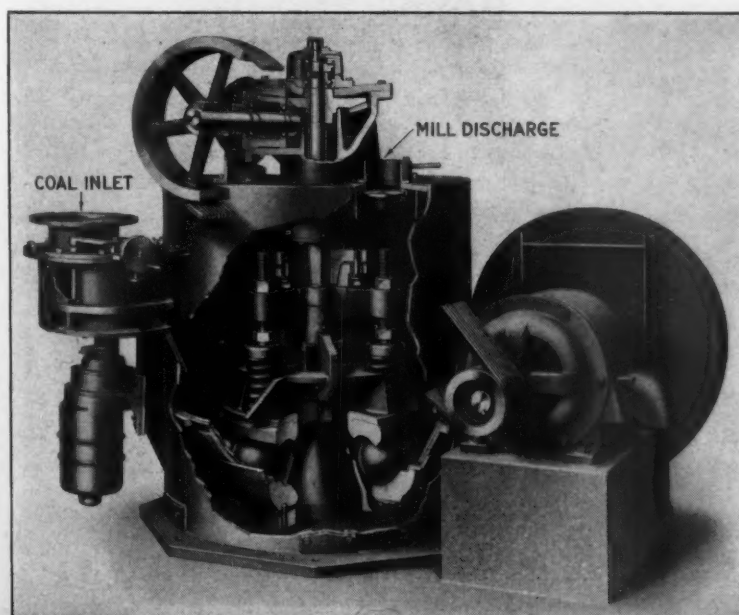
Incorporated in the pulverizers available for different purposes are features that permit them to meet the requirements of the industry, as determined by a survey, in:

Simplicity	Accessibility	Reliability
Economy	Minimum Floor Space	

Furthermore, there has been eliminated:

Waste of Power	Uncertainty of Fineness
Lubrication within the Grinding Zone	

In the comprehensive and diversified range of types and sizes of B&W Pulverizers, there is always a right pulverizer for specific conditions. Let us make an engineering survey of your grinding operations and tell you more about these pulverizers. The Babcock & Wilcox Company, 85 Liberty Street, New York, N. Y.



B&W Type B Pulverizer—air-separation type—for small capacities and direct-firing of cement and lime kilns.

BABCOCK & WILCOX

Announcing "SQROUND MESH"

Something New and Better
in Perforated Plate



1 1/4" SQUARE



1 1/4" SQROUND



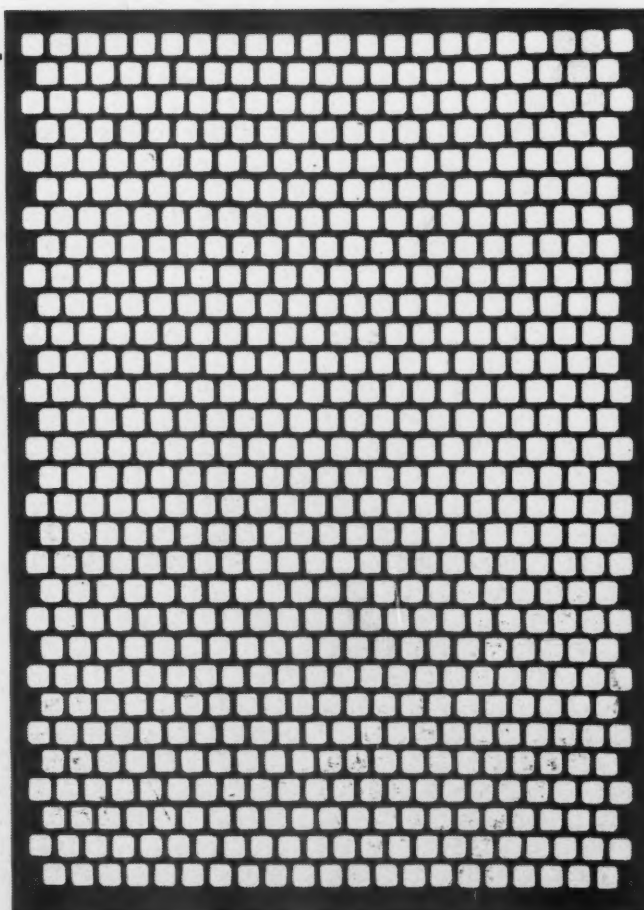
1 1/2" ROUND

A square opening 1 1/4" will pass oversize material because the diagonal dimension is 1 3/4".

A round opening 1 1/2" diameter (which is equivalent to 1 1/4" square opening) will give greater accuracy but not sufficient capacity.

"Sqround Mesh"—a new Hendrick development—combines the good features of round and square mesh. It eliminates the oversize which goes through the diagonal dimension of a square mesh because the distance between the fillets in the corners of "Sqround Mesh" is the same as the diameter of an equivalent round mesh.

"Sqround Mesh" can be furnished in any size mesh required, in either flat plates or in double corrugated plate, also a Hendrick development. Write for complete data.



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Rock Products

With which is
Incorporated

CEMENT *and* ENGINEERING
NEWS

Founded
1896

Volume XXXVII

Chicago, February, 1934

Number 2

Recovery Progress—Trends

CONVENTION of crushed stone, sand and gravel, and slag industries at Cincinnati, Ohio, January 22-26, will go down in history as the most important gathering in the history of these industries. For the first time their common problems overshadowed their competitive relationships and a union of the industries into a single mineral aggregates association or institute was freely predicted. The NIRA has apparently already accomplished that much. The meeting was designed to give producers an opportunity to ask questions—and they asked them; they also freely expressed their own opinions. Naturally, many questions asked could not be satisfactorily answered at this stage of the code administration; but the Code Authority of the industries must have been able to make some very helpful soundings of the sea of difficulties ahead, and to be in a much better position to chart a safe course. There was more optimism over the

immediate business outlook than has appeared in the last two years.

"Compliance" and "Enforcement"

The NRA has made a clear distinction between "compliance" with code provisions, and "enforcement." Compliance is acceptance or signing of the compliance form by the units in an industry. It is obtained or sought through education, persuasion, arbitration, etc. Enforcement means legal pressure brought through the Federal Trade Commission or Department of Justice as a result of failure to obtain compliance.

Code violations fall into three groups: (1) labor; (2) trade practices; (3) prices. Any interested citizen may register a complaint. Complaints regarding violations of labor provisions should come preferably from an employee or a member of the industry. These complaints, if not settled locally, are routed through the code authorities to the

National Labor Board, which has 18 regional boards. The Code Authority is expected to pass on and settle problems of violations of trade practices, without recourse to NRA where possible. The NRA member of the Code Authority attempts conciliation, if necessary, makes rulings on interpretation of codes, or obtains them from higher-up NRA officials. The NRA takes the responsibility for final action toward enforcement, legal or otherwise. It can demand readjustment or reorganization of the code authorities if the NRA member of it reports, or complaints develop, that the code authority is not functioning fairly and effectively. Consumer complaints of price-gouging, etc., must be transmitted at once to the NRA member of the code authority, who will see that they are properly handled.

In effect the code authorities are more in the nature of expert advisory boards with a direct contact through their NRA members



Code Authority of the Crushed Stone, Sand and Gravel, and Slag Industries—probably the largest code administrative body to be elected under N. I. R. A.—in session at Cincinnati, Ohio, January 22

with the National Recovery Administration, which, only, has the power to bring about action for enforcement of the codes, either through the Federal Trade Commission or the U. S. Courts.

Enforcement Activities Increase

Price-cutting has been charged under the code of the bituminous coal industry against at least four producers. The Department of Justice has filed charges and the cases are now awaiting action by Federal grand juries. Although numerous other cases of alleged violations in various industries have been referred to the Department of Justice and the Federal Trade Commission, the removal and restoration of blue eagle emblems by NRA has proved sufficient in the great majority of cases, and still constitutes, apparently, the most effective method of enforcement.

At Portland, Ore., a Federal district court judge upheld the allotment provisions of the lumber industry code and dissolved a temporary injunction the Willamette Valley Lumber Co. had previously obtained to prevent the lumber code authority from interfering with its operation of double shifts to fill current orders. The court upheld the constitutionality of NIRA and lumber code as an emergency measure. The lumber company is compelled to accept its quota and limit hours of operation. The company is small and contended that its big competitors, with large stocks on hand ready for shipment, put it at a disadvantage.

Small Business Wins Concession

Criticism of NRA by Senators Nye and Borah, who have constituted themselves champions of small business enterprises, has led NRA Johnson to direct his deputies to omit "open price clauses" from all future codes, until a general plan can be developed which will satisfy the senators. Gen. Johnson claims that 90% of complaints about code operation come from small business enterprises. Under the open price systems agreement to list prices and abide by them until new prices are posted is compulsory. The prices are supposed to be minimum prices and the sellers are not required to abide by them in that they can sell at higher prices. The complaint is that sellers are subject to pressure to make these uniform prices. This practice is not sanctioned by NRA, but Gen. Johnson believes that there must be a bottom price to stop destructive price-cutting. Prices are giving NRA the most worry right now.

Anti-Trust Law Liability

Donald R. Richberg, general counsel, NRA, has again created considerable doubt in the minds of business men as to how far they can go to put business on a profitable basis by raising prices. He has issued another warning about "monopolistic practices," as a result, largely, of the attack on NRA in the Senate. He says: "The NIRA does provide that any action complying with the provisions of a code shall be exempt from the provisions of the anti-trust laws. This

does not mean two things: First—this does not mean that a code can be written so as to authorize monopolistic practices. Second—this does not mean that, under the protections of a code, industrial groups can organize and then, without regard to the requirements of the code, proceed to fix prices, or to carry out other operations in restraint of trade, free from the penalties of the anti-trust laws." Mr. Richberg, however, has said that without suspension of the anti-trust laws, no effective control of business, looking to recovery, can be exercised. He defends minimum price-fixing as a safeguard to small business thus: "A dominant unit in a large industry could raise wages and shorten hours in conformance with its code, and at the same time cut the price of its products to the consumer. Thus, while the business looked toward a further loss, labor regulations would have been complied with and consumer costs lowered; however, such action by the large company would result in the bankruptcy of small competitors not possessed of the capital necessary to absorb the loss entailed in meeting the big company's low sale prices; after ruining competition, the large company would have monopolistic influence of its field."

What are "monopolistic practices"? The NIRA does not define them. The law itself is conflicting. It reads: "Any action complying with the provisions" of a code "shall be exempt from the provisions of the anti-trust laws of the United States." In another place it says the President must find before approval of a code that "it is not designed to promote monopolies." Is minimum price-fixing really price fixing within the meaning of a monopolistic practice? Apparently, if a minimum price is too profitable a price there is danger that it is.

Would Continue CWA to May 1

The President has urged upon the Speaker of the House of Representatives an additional appropriation of \$950,000,000 for civil works and for relief to cover requirements to May 1. It is said that the President is not very keen for CWA because of the political scandals that are coming to light under it. Congress, on the other hand, is for it because it helps build up the members' patronage. Apparently CWA has not helped the capital goods industries to any extent, and the civic works constructed under its jurisdiction will be very costly. The only legitimate excuses for CWA are that it is better to give people work than charity, and that time did not permit development of more economic planning of the work.

Investigation Becoming a Major Industry

Enforcement of codes, checking up CWA activities, and other government activities is becoming an industry in itself. According to the *Chicago Tribune*, government detectives are becoming so numerous they get in each other's way; it relates how two agents of the Department of Justice became sus-

picious of three men who apparently were shadowing them, acting very suspiciously wherever they went. The D. J. agents arrested the shadowers and took them before a Federal official, where they identified themselves as investigators for the AAA, working on a similar assignment. All five were sent on their way with the remark: "You fellows ought to wear ribbons to identify yourselves."

PWA Work Investigated

Secretary of Interior Ickes, Public Works Administrator, has been given full authority by President Roosevelt to investigate charges of graft and payroll manipulation in all public works projects. Inspectors are making special payroll investigations on several jobs. Work on the \$42,000,000 tri-borough bridge project in New York City is being held up pending charges that one bridge official has accepted a commission for rental of offices to the bridge authority. Another project in the Middle West is under investigation where it is said the "kick-back" scheme is being practiced. This was explained as indicating that the employees were actually paid smaller salaries than appeared on the payroll.

Checking Construction Material Costs on PWA and CWA

Secretary of the Interior Ickes has announced the organization of a new unit in the engineering division to be known as the cost of construction material authority to collect cost price data on materials in every state. The new unit will be headed by Arch W. Loney, assigned to the post from the PWA division of investigation. The data collected will be used by public works engineers in checking estimates in project applications and by the inspection division in approving requisitions for funds allocated to projects but not yet drawn from the treasury. The money is being released only after careful scrutiny and then only in small sums. Public works officials say the elaborate checkup system and this method of disbursing funds was holding "to the minimum" complaints of padding on public works.

Money for Home Modernization

A new scheme to help the capital goods industry is said to have been discussed at the White House, and the President is reported to be preparing to ask Congress for \$250,000,000 to be loaned to home owners at a low rate of interest for home rebuilding and repair. The President hopes this will furnish a needed stimulus to the construction industry, which is still very largely dependent on public works. While such rebuilding and repair contemplates mostly expenditures for painting, roofing, plumbing, etc., it should develop something of a market for stucco, plaster, fireproofed basements, etc., to the advantage of rock products manufacturers.

Thrift Has an Advocate!

The New Deal philosophy, to all appearances, is a philosophy of spending all you have, or ever expect to have. At last a voice is raised in protest—A. P. Gianinni,

famous West Coast banker, whose reputation as a banker and an honest man has not been questioned. He says: "Bankers must convince the people of the advantage of thrift and their faith in the possibility that bankers as well as progressive economists may still have sound solutions for the problem of savings and investments. I personally believe we can do these things only by meeting the challenge of the new economists fairly and squarely. * We must prove, and prove from now on publicly and in popular language, that private thrift is not outmoded, and that we certainly and definitely cannot adjust our individualistic society to an 'economy of plenty' by artificially creating an 'economy of extravagance.' Do not the plans of the 'economists of extravagance,' whatever their motives, and whatever their nomenclature, lead as directly to communism as the bloody disturbances in Moscow in November, 1917? If private thrift is abolished is there any other answer, then, but Moscow's answer? For us as bankers this is the crux of our crisis. We cannot save thrift by making a holocaust of the private savings of millions as has been done between 1924 and 1934. We can save it only by making it profitable for the individual to save, and above all by making it safe for the individual to save. . . ."

PWA Allotments Withdrawn and Re-Allotted

New PWA projects are constantly being announced although the original \$3,300,000,000 was at one time all allotted. The reason is that something over \$50,000,000 in allotments have been rescinded because of inaction or inability of local authorities to act. Included in the allotments rescinded was \$10,000,000 intended for highway construction in Colorado. The state supreme court ruled the state constitution prevented borrowing money for highways.

RFC Loans Being Repaid

Some of the RFC loans to banks, railroads and business are being repaid. Harvey Couch, of the RFC board of directors, said recently: "Perhaps many will be surprised to learn that of the \$3,139,309,375 already lent by the RFC, \$1,059,214,273 has been paid back. Conditions are so much better that applications for loans totaling \$333,000,000 have been withdrawn."

CWA Disrupts Southern Labor Standards

Just what the attraction of the minimum scale of 40 cents an hour for unskilled labor, with a 30-hour week, had for the Southern farm worker is shown by a report of the Bureau of Agricultural Economics. This disclosed that in some Southern States farm laborers were paid an average of 75 cents a day. On CWA projects a man working five days six hours a day could make twice as much as a farm laborer working 7 days a week without a limit on hours.

Federal Charters for Big Business?

It is reported that Congress will soon be asked to pass a law requiring a Federal charter or license for all corporations doing business in more than one state. Two systems are said to be proposed in present official discussions. First, compulsory Federal charters. Second, voluntary Federal charters (making state charters unnecessary for companies which qualify), supported by a license system. Without a license, a concern would not be allowed to do business under the second plan. Probably the license system would be operated by the Federal Trade Commission, where it would be teamed with powers the Commission now has over security issues. This licensing plan would make companies submit uniform annual statements and reports on business done. Supervision of financing and other powers are being considered. Penalties would be provided for violation not only of the incorporation law, but any law dealing with interstate commerce.

Price Increases Stir Up Politics

Necessary increases in quotations for portland cement are furnishing fuel for much local politics. In Wisconsin, for example, a Madison (the state capital) newspaper features a bold-face-type editorial advocating the state taking over the Manitowoc plant of the Medusa Portland Cement Co., because "bids submitted to the state highway commission have been identical" and "such a condition could not have come about unless there was collusion between units of the nation-wide cement trust." A politician at Manitowoc, using this familiar introduction, is appealing for local support on the theory that if the state operated the cement plant the men would be employed "on full time, all the year basis, and not periodically" as at present. Politicians in California and Illinois are using similar arguments.

Between the Devil and the Deep Blue Sea

Cement manufacturers find themselves in the difficult position of being at war with their customers and distributors—the building material dealers. Following a public hearing at Washington, D. C., January 15 and 16, at which militant dealers protested the provisions of Article XI of the code of fair competition for the cement industry, NRA Johnson ordered the obnoxious article suspended until a peaceful compromise or settlement may be made.

The article in question is the one which requires cement manufacturers to sell cement direct to the U. S. Government, state governments, counties, parishes, contractors on work for such governmental units, except where the work is wholly in cities or towns, railways, public utilities, concrete products manufacturers, commercial ready mixed concrete producers. Dealers want most or all of this business to go to them. Protests were vigorous and many. Dealers threatened to throw their own code overboard, to

import cement, and do all kinds of things to cement manufacturers. Some claimed the manufacturers sided with them; but if such were the case, no manufacturer said so.

Crops Cut—Fertilizer Sales Up

In spite of the fact that the AAA is hiring farmers to reduce acreage, cut crops, store grains, etc., current sales of fertilizer are running about 25% ahead of a year ago, although the season has hardly started. Apparently AAA is fully aware of the fact that farmers and planters are buying fertilizer to increase the yields of acreage not withdrawn from production by government subsidies. Notwithstanding the fact that increased yields per acre will offset the reduction due to restricted acreage, the AAA is not going to discourage the use of fertilizers, fortunately for fertilizer manufacturers. In fact the TVA is going to put the government into the fertilizer business at Muscle Shoals, Ala., in a big way. Secretary of Agriculture Wallace has said it is the policy of his department to aid producers to secure a maximum output from a minimum of labor, which is sound, and profitable to the farmer as long as he can collect government subsidies without actually reducing his output. But what effect will it have on increasing employment on farms?

Collective Bargaining Statistics

The National Industrial Conference Board conducted a survey which gives enlightening facts on the status of employer-employee relations. Since the enactment of the NIRA, the survey shows the number of manufacturing and mining concerns that deal with their workers through employee-representation plans has increased 180% and the number of companies that have trade union agreements with their employees has increased 75%. Out of a total of 3,314 reporting concerns employing 2,585,740 wage earners, or 27% of all employed in manufacturing and mining industries, 2,284 companies, employing 1,013,016 workers, dealt individually with their employees; 653 companies, employing 1,164,294 workers, had some form of employee representation; and 416 companies, employing 240,866 workers, had trade union agreements. A few companies combined individual and collective dealing. A comparatively small number of companies and less than 10% of the workers come under the organized labor classification. Union labor assumes the right to act as spokesman for all workers in its demands upon industry.

Federal Rules on Blue Eagle Purchases

The U. S. Treasury Department has ruled that no firm getting a Federal order could begin deliveries until after it had signed the President's Re-employment Agreement, or its industry's code compliance. The Treasury precedent was established on a contract given the Schneider Brick and Tile Co., Slidell, La. It notified the contractor in the case not to accept bricks made before the concern raised its NRA emblem.

Officers and Members of the Code Authority Crushed Stone, Sand and Gravel, and Slag Industries

OFFICERS:

Chairman: Otho M. Graves, Drake Building, Easton, Penn.
Vice-Chairmen: H. V. Owens, 404 Court Street, Utica, N. Y.; Russell Rarey, 450 Columbian Building, Columbus, Ohio; C. L. McKenzie, Diamond Bank Building, Pittsburgh, Penn.
Executive Secretary: V. P. Ahearn, Munsey Building, Washington, D. C.
Treasurer: Harris N. Snyder, Ellicott Square, Buffalo, N. Y.
Assistant Treasurer: J. R. Boyd, Munsey Building, Washington, D. C.
Recording Secretary: H. J. Love, Leader Building, Cleveland, Ohio.

MEMBERS:

Arthur L. Allen, 409 Grand Avenue, Pueblo, Colo.
 H. N. Battjes, Michigan Trust Building, Grand Rapids, Mich.
 Paul P. Bird, P. O. Box 2144, Boston, Mass.
 A. J. Blair, P. O. Box 1175, Milwaukee, Wis.
 Anson S. Blake, 204 Balboa Building, San Francisco, Calif.
 W. E. Bliss, City Bank Building, Youngstown, Ohio.
 H. G. Boyd, Selma, Ala.
 L. J. Boxley, Boxley Building, Roanoke, Va.
 John Buckland, Commonwealth Building, Allentown, Penn.
 H. P. Caldwell, 129 River Road, Louisville, Ky.
 F. D. Coppock, West Fourth Street, Greenville, Ohio.
 Fred Curtis, 1109 Omaha National Bank Bldg., Omaha, Neb.
 Anderson Dana, Underwood Building, 30 Vesey Street, New York City.
 H. S. Davison, 42nd & Davison Sts., Pittsburgh, Penn.
 K. A. Dietrich, Ecorse, Mich. (c/o Great Lakes Steel Corp.).
 Earl Flad, Pittsburgh, Penn. (c/o Carnegie Steel Co.).
 R. C. Fletcher, 907 Bankers Trust Bldg., Des Moines, Iowa.
 Wilson Foss, 250 Park Avenue, New York, N. Y.
 Alexander Foster, Jr., 1620 Beach Street, Philadelphia, Penn.
 Geo. W. Gauntlett, 901 Harrison St., Seattle, Wash.
 J. Rutledge Hill, Mercantile Bank Building, Dallas, Tex.
 J. J. Hock, Pier 2, Pratt Street, Baltimore, Md.
 Fred Hubbard, 1200 City Bank Building, Youngstown, Ohio.
 C. E. Ireland, 2019 Sixth Avenue, No., Birmingham, Ala.
 W. H. Klein, 1010 James Building, Chattanooga, Tenn.
 E. J. Krause, Syndicate Trust Building, St. Louis, Mo.
 George A. Mattison, Jr., Southern Railway Building, Birmingham, Ala.
 Thomas McCroskey, Knoxville, Tenn. (c/o American Limestone Co.)
 L. E. McDermut, 2817 E. 99th Street, Chicago, Ill.
 Robt. J. Potts, 1410 Amicable Building, Waco, Tex.
 John Prince, City Bank Building, Kansas City, Mo.
 S. J. Reader, 2910 27th Avenue, No., Minneapolis, Minn.
 H. E. Rodes, 512 10th Avenue, No., Nashville, Tenn.
 Eric Ryberg, P. O. Box 1214, 1605 Beck Street, Salt Lake City, Utah.
 W. R. Sanborn, City Bank Building, Kankakee, Ill.
 H. M. Sharp, Second National Bank Building, Toledo, Ohio.
 J. L. Shiely, 210 Builders Exchange, St. Paul, Minn.
 W. A. Smoot, 3020 K Street, N. W., Washington, D. C.
 F. P. Spratlen, Jr., 4800 Brighton Blvd., Denver, Colo.
 E. Guy Sutton, Mattoon, Ill.
 Ford J. Twaits, 2730 So. Alameda Street, Los Angeles, Calif.
 C. A. Wagner, Sioux Falls, S. D.
 H. E. West, Muskogee, Okla.
 T. I. Weston, 601 Forsyth Building, Atlanta, Ga.
 R. S. Wilson, Ft. of Ashley Street, Little Rock, Ark.
 W. F. Wise, 1611 Santa Fe Bldg., Dallas, Texas.
 M. W. Woodward, Rock Springs, Wyo.
 A. L. Worthen, 67 Church Street, New Haven, Conn.
 A. W. Worthington, Carnegie Building, Pittsburgh, Penn.
 Porter W. Yett, 43 S. E. Salmon Street, Portland, Ore.

ADMINISTRATION MEMBER:

R. E. Plimpton, Assistant Deputy Administrator, National Recovery Administration, Washington, D. C.

National Slag Association Re-elects Officers

THE National Slag Association held its annual meeting at Cincinnati, Ohio, January 22-26, in connection with the annual conventions of the other two mineral aggregate associations. C. L. McKenzie, president, Duquesne Slag Co., Pittsburgh, Penn., was reelected president.

Fred Hubbard, Standard Slag Co., Youngs-

town, Ohio, director of research of the association, reported "Present Status of National Slag Association Ten Year Test Series"; Dr. H. F. Kriege, France Slag Co., Toledo, Ohio, read a paper, "Tests of Mixtures of Bitumens and Mineral Aggregates." C. E. Ireland, president, Birmingham Slag Co., Birmingham, Ala., led a general discussion of the effect of NRA and the code on the National Slag Association, of which he is vice-president. Mr. Ireland also served as

a representative of the slag industry on the temporary code organization committee.

The rest of the meetings were taken up by routine business, reports of officers, etc., except for a brief address by Otho M. Graves, chairman of the Code Authority of the Crushed Stone, Sand and Gravel, and Slag Industries, who expressed satisfaction with the outcome of the industries' efforts to get an effective code.

Bituminous Concrete Producers Would Go Under Aggregate Industries Code

PRODUCERS or manufacturers of cold-laid bituminous concrete paving material have petitioned the National Recovery Administration to be allowed to form a division under the code of fair competition for the crushed stone, sand and gravel, and slag industries. A public hearing was held in Washington, February 1. The petition states that by the term cold laid bituminous concrete manufacturers is meant any member of the industry engaged in the processing of stone, sand, gravel or slag in their proper grading by coating of such aggregates with a bituminous binder in a mixing plant and whose manufactured product shall be such that it may be transported by trucks of railroad cars, unloaded and laid cold without further treatment.

Executive Committee of the Code Authority

Otho M. Graves, Chairman
 H. V. Owens.
 Russell Rarey.
 C. L. McKenzie.
 W. E. Bliss.
 H. P. Caldwell.
 Alexander Foster, Jr.
 J. J. Hock.
 C. E. Ireland.
 E. J. Krause.
 Robt. J. Potts.
 John Prince.
 H. N. Snyder.
 E. Guy Sutton.
 A. L. Worthen.

Administration Member: R. E. Plimpton.

Executive Secretary: V. P. Ahearn.

Executive Council of the Code Authority

Otho M. Graves, Chairman.
 H. V. Owens.
 Russell Rarey.
 C. L. McKenzie.
 Alexander Foster, Jr.
 H. N. Snyder.

Administration Member: R. E. Plimpton.

Executive Secretary: V. P. Ahearn.

Stone, Gravel and Slag Producers Exhibit Returning Confidence

Outlook the Best in Last Two Years—Three National Associations Discuss Common Code as One

THE CONCURRENT annual conventions of the National Crushed Stone Association, the National Sand and Gravel Association and the National Slag Association at Cincinnati, Ohio, January 22-26, proved to be a rather serious affair. The chief subject of discussion, of course, was the code of fair competition for these industries; the subject was certainly discussed and rediscussed to the heart's content of the best "discussers." While doubtless the great majority came away somewhat confused as a result of both public and private discussions, they nevertheless came away with considerable confidence that the code is already functioning in many localities, and with quite complete confidence that it points the way out of many difficulties encountered in the recent past.

In general the questions were of the nature "what can we do," or "what can't we do." While most regions and districts of the industry have been discussing or debating these points, a few more progressive groups, particularly those on the West Coast, have been going ahead and doing things. As one West Coaster remarked in private conversation: "We will find out soon enough the things we can't do, so why worry on that score; in the meantime let's go ahead and do the things we believe the code gives us the right to do." A little more of that spirit would certainly hasten results and take considerable of the immediate load off the shoulders of the Code Authority, its executive committee, and its executive council.

Code Authority Organizes

The members of the Code Authority elected by the 16 regions (see *Rock Products*, January, p. 68) met for the first time January 22. With two or three exceptions the entire board of some 40-odd members was present. They took their jobs very seriously, and after electing 12 additional members-at-large, as code provides, the rest of the day was spent in drafting rules and regulations to govern the procedure of the Code Authority, electing the executive committee of 15 (besides one NRA member) and the chairman and executive secretary. The biggest obstacle was defining the respective powers and authority of these two officers. Something of a compromise finally resulted in that neither has absolute jurisdiction over the other; they are, for want of a better term, "cooperating associates" in executive administration of the code.

The meetings of the Code Authority were generously made open sessions, and a very

considerable "gallery" of more (or less) fortunate producers watched the deliberations with respectful interest. The Code Authority of this and every other industry is now entrusted with a certain public interest; and the fact that the Code Authority of these industries is one of the first to recognize this and avoid "star-chamber" proceedings was favorably commented on by many producers.

The Code Authority held many and prolonged meetings in which much time was consumed in general discussion. Eventually decision on most points was passed along by Code Authority to the executive committee; and many of those referred to the executive committee were passed along to the executive council of six industry members, the NRA member, and the executive secretary of the council, who is not a voting member. The names of these committee members are given in the accompanying inserts.

Business Outlook for 1934 Is Good

About the only fly in the ointment of these industries is the public-owned plant. Apparently most of the mineral aggregates used on Civic Works Administration projects has been locally produced by direct CWA labor using either public-owned or leased portable

plants. The same is true on many Public Works Administration projects. With this kind of competition legitimate, or commercial, portable plant operators, are just as much at war as are the so-called permanent plant operators. Both are particularly incensed by the activity of certain equipment manufacturers who have done much to aggravate the legitimate producers' troubles by leasing portable equipment for temporary CWA and PWA projects. This problem of public-owned or leased portable plant has done more to bring commercial producers—both fixed-plant and portable-plant—under one banner, than probably could have been accomplished in many years under normal conditions.

The general opinion among the best informed members of the Code Authority was that the industries would soon win a sympathetic and understanding attitude toward this problem from the various interested Administration officials at Washington. Except for what persuasion or pressure Washington can bring to bear on local political bodies to get them to understand and adhere to the essentials of the recovery program, there is little that can be done to combat this kind of unfair competition except local education.

Aside from this one factor the outlook is that the industries will have a very fair demand for production this year. Even the railways are buying ballast. An executive officer of one very large company said in private conversation that his company already had booked more business for this year than it had shipped in the last two years.

Machinery and equipment men, of whom there were many, seemed fairly well satisfied that there would be many orders placed for repairs and replacements in the near future. Albert L. Worthen, vice-president, Connecticut Quarries Co., New Haven, Conn., with seven or eight plants, told the manufacturers of equipment in an open meeting, that his plants were in need of much new equipment, although they have been maintained probably on a par with those of any other company; and he believed that such a condition was very general.

Otho M. Graves, chairman of the Code Authority, told producers and manufacturers in an open session that the code provision against installation of new productive facilities would be liberally interpreted; that where increasing the efficiency or lowering the cost of production required the installa-



Otho M. Graves, Chairman of the Code Authority and of the Executive Council

tion of a new piece of equipment or machinery, and this incidentally increased the productive capacity of the plant, the Code Authority would not construe the code to prevent such installation.

General Sessions of All Industries

There were five general sessions in which producers of all three industries joined. The first was a joint luncheon at which John Prince, president, Steward Sand & Material Co., Kansas City, Mo., presided. The one speaker was Harry H. Van Horn, advisor on business practices to the National Recovery Administration, president, Better Business Bureaus of the United States, Columbus, Ohio. Mr. Van Horn began by praising the code of the mineral aggregate industries, which he thought was so complete that he wondered how "they came to leave out the kitchen stove."

Commenting on the role of the trade association in the NRA program, Mr. Van Horn said: "The greatest opportunity for associations is in that development and administration of industry which for lack of a better phrase I term 'industry planning.' This implies balance of production and consumption, security of employment, avoidance of preventable wastes, encouragement and advance in the science of industry and in the processes of marketing and distribution."

The Code's Development and Principal Features

With Harold V. Owens, president, National Sand and Gravel Association, presiding, Otho M. Graves, chairman of the Code Authority, spent the greater part of one afternoon explaining the code in all its essential features. He traced the history of writing the code, the harmonizing of all the points of view, as for example that of the portable-plant operators who originally objected to being included, the opposition of the machinery manufacturers to the production control features, the opposition of contractors who wanted to continue to produce their own aggregates, etc. He expressed confidence and satisfaction with the outcome, assured portable-plant producers that they were now a recognized part of the industry and would receive fair treatment.

Mr. Graves explained in detail the meaning of "permissive" areas as defined in the code—dispelling the popular concept of many producers that these are per se prohibitive areas. He emphasized the necessity for producers to make a thorough survey prior to submitting their plans for permissive areas and the absolute necessity for supplementing their plans with ample evidence to support them. Up to this time a few plans had been submitted but none was yet approved. Until passed upon by the Code Authority and approved by NRA, no plan was legally effective; hence until such approval everything was "open" area. The necessity for early action by the state committees having this in charge was obvious.

Mr. Graves then took up the subject of dues or assessments to cover the cost of code



V. P. Ahearn, Executive Secretary of the Code Authority

administration and expressed the opinion that only the Code Authority had the right, or power, to levy these assessments. The dues or assessments required to meet the budgets of the district and regional organizations must be passed upon and levied by the Code Authority and returned by it to the district and regional committees. Requests for assessments for local expenses, he said, should be supported by ample data to justify.

Questions were then asked covering such points as how changes in the code might be made; the frequency of meetings of the Code Authority; the powers of the executive committee; the power to enforce the code; enforcement of the provisions covering restrictive areas; how restrictive areas might be protected in the interim; the form of compliance, whether there must be a signed compliance, or merely acquiescence, as in the case of the Ford Motor Co., which, incidentally, is selling slag for government projects as well as motor trucks. Naturally, no complete or final answers could be given to many of these questions at the time. So, rather than mislead the reader by the editor's interpretations of Mr. Graves' answers, it is suggested that he wait until the Code Authority has prepared authentic data.

Ford J. Twaits, president, Consolidated Rock Products Co., Los Angeles, Calif., contributed some valuable suggestions on how to promote local support for the code through educational and publicity work with local chambers of commerce, contractor associations, etc. He said contractors had been invited to attend meetings of local producers for discussion of the code, and to take part in the discussion. Public works authorities were also contacted. The use of blue eagle stickers on trucks, etc., had also proved helpful. He said, up to that time, only one Los Angeles producer had failed to comply with the code.

Open-Price Policy—Uniform Cost Accounting, Terms of Sale, Credit Practices

A. L. Worthen, retiring president, National Crushed Stone Association, presided. Alexander Foster, Jr., Warner Co., Philadelphia, Penn., gave a brief review of the development of the open price provision of the code. He stressed the difficulty which the industry had had in providing a clause to meet the approval of NRA, which was opposed to any average-cost provision, as against an open price agreement. In short, he believed, that the open price policy, if fairly and intelligently administered within the industry, would tend to stabilize prices within districts, and bring them to one general and profitable level.

Mr. Foster pointed out that in areas where the open-price policy has been adopted by leading producers it has worked well. He stressed the need, however, for developing rules within districts to conform to local conditions; the open price under the code may be on the basis of plant price or delivered price. Such prices filed, if need be, every five days are effective only within the zone of influence of the producer who files the price. Since the minimum price filed cannot be less than prime cost plus 10%, and because trucking expense naturally would not fall within "prime cost," the speaker recommended establishment of trucking zones within which a truck differential, based on mileage, would be added to price quotations.

Questions from the floor brought out the information that after open prices were established that minimum prices within a district could not be set up on the basis of those filed prices. In other words producers can not agree not to make lower quotations.

F. J. Twaits, Los Angeles, Calif., said that uniform cost methods and contract forms had been used for about ten years in his district. He believed that the satisfactory results were due not only to the uniform methods in this regard but also to the liberal cash discount allowance of 20 cents per ton for payment within 10 days. Even during the depression, he said, records indicated that collections never had gone below 85% by the tenth of the month.

E. Guy Sutton, Neal Gravel Co., Mattoon, Ill., voiced the apparent sentiment of many in the meeting when he said he was opposed to the prime cost plus 10% feature and the open price clauses of the code because they were indefinite and conflicting. They were indefinite, he said, because of the time element involved in the filed prices and conflicting because while a producer was prohibited from filing a price which was below prime cost plus 10%, he could, on the other hand, meet other filed prices, even if they ran below what the minimum would be in his case. Other speakers assured him that the code provisions were as definite and non-conflicting as the NRA would permit. Mr. Foster explained, for example, that government representatives frankly had sought to establish

a low prime cost in order to protect producers, particularly in the South, whose prime cost is a large per cent of the total cost because of meagre mechanical equipment.

Many questions on the detailed working out of the open price provision of the code were heard, but due to incomplete organization not only of the Code Authority but of many regional and district organizations, arbitrary "yes and no" answers could be given only in a very limited number of cases. One detail brought out was that separate prices may be filed for different sizes of stone or products in the same category.

J. L. Shiely, president, J. L. Shiely Co., St. Paul, Minn., raised the question of whether a pre-letting price would have to remain as a regular bid price in the case of an advertised contract. He pointed out that if the pre-letting price did not hold, nothing would prevent a contractor from receiving the unethical but legal, secret assurance from a bidder that while his filed price might be high, he would subsequently file a lower price in time for it to become effective on the contract in question.

From this point on the meeting developed into a very lively session with code critics and code defendants expressing opinions at some length and with some heat. Bruce S. Campbell, president, Harry T. Campbell Sons Co., Towson, Md., registered impatience that Code Authority members or others present in Cincinnati, could not give more definite answers to the stone producers and others who had come to the convention with the express purpose of finding out just how, when they got back home, they could make the code effective locally. As the information developed, however, on various points, particularly in the afternoon joint session, Mr. Campbell and other speakers who at first protested, testified that they were satisfied with the progress which had been made in developing certain information.

Functions of Committees

C. L. McKenzie, president, National Slag Association, was scheduled to preside. At the beginning of the session, devoted to the functions of district, regional and division committees and the Code Authority in the administration of the code, John M. Buckland, president, National Slag Co., Allentown, Penn., appealed to the producers present not to cloud the issue by asking for details before the general practices and principles as set forth in the code had been fully discussed and interpreted. Reassuring was his thought on the code which held that rehabilitation of business was the starting point for every code, and that the thought of the government was to give the producers a chance to make a fair profit.

So far as the open price was concerned, he pointed out that the NIRA emphatically prohibits price fixing monopoly. In the code for the aggregate industries, he reminded those present, permission had been granted for them legally to go down as far as prime

cost plus 10% in order that producers could keep old contracts and in order not to interfere with the free flow of competition—provided that price cutting does not go below the fair price of a given area's rightful producers.

John Prince, Kansas City, Mo., who acted as presiding officer for this session, in place of Mr. McKenzie, declared that he would rule out of order any comments on the work of the Code Authority. Bouquets and brickbats both were barred as irrelevant. A rapid fire of questions on such details as state committee quorums necessary; modification of the five-day limit for filing prices, in some cases by the code committee, etc., developed. One questioner sought information on whether or not it was advantageous to incorporate a regional committee. The answer was that incorporation was not required and that in most cases this probably would not be needed. It was also brought out that proxies were admissible at regional producer meetings but not at regional committee meetings. It was stated that regional rules were the outgrowth of regional committee voting and not of regional meetings of themselves. The regional committee in all cases, of course, is called upon to act with the background of producers' sentiment as expressed at the regional meetings, in mind.

Financing of the code was referred to briefly. Questions brought out that the district committees do not have within themselves power to assess. Assessments may be made only through the Code Authority.

Replacement of committee members taken by death or through other causes was a possibility suggested, and this led to the information that replacement of such members would have to be by election by the same

agency which named the original member.

Garvin Pelsue, sales manager, Graham Bros., Inc., Los Angeles, Calif., chairman of the district committee in that area, testified that assessments in the case of his district had been made before the regional group or Code Authority had had time to legally pass upon them, but that his organization had encountered no difficulty. Producers seemed willing to take a chance with the legal technicality involved in order to put the code machinery in motion.

Mr. Prince brought out forcefully the point that district committees in formulating their rules should have expert legal advice, if necessary, in order that the phraseology of their rulings would stand the test of clarity and justness in the event the rules were at some time subject to enforcement through courts. H. V. Owens, president, Eastern Rock Products, Inc., Utica, N. Y., developed the point that the district committee has two main duties: First, to specify and map with exactitude, the area included in a given district; second, to serve as a clearing house for open-price filing, etc. Rules in the latter connection, must be finally approved by the regional committee and the Code Authority.

State Committees—Production Control

Russell Rarey, president, National Crushed Stone Association, was presiding officer for the final joint session of the three national associations.

The program was devoted to "State Committees and Their Relation to Production Control." It was pointed out that the production control feature of the aggregates industries code is perhaps unique in the annals of code development so far, and the NRA is following the avowed purpose of proceeding cautiously with the establishment of permissive areas. Therefore, it was stated that producers must proceed with the utmost caution and thoroughness in developing their facts to be presented with applications for permissive areas being set up.

Harry H. Brandon, C. C. Beam, Inc., Melvin, Ohio, told briefly the facts which they had developed in preliminary work leading towards application for a permissive area. Their Ohio survey showed that the number of producers had increased from 22 to 109 over a period of about 10 years. Of the 109, twenty were shown to be railroad-owned. Sixteen of them were of a capacity of 500 tons per day or over and 73 less than 500 tons capacity, of which 64 were not reported for taxation purposes. An additional fact brought out by the careful survey made, was that 14 out of the 73 smaller plants were all that were paying employers' liability insurance premiums under existing state regulations.

In every application for the setting-up of a permissive area it is necessary to show the actual and average capacity of plants in the area and also the actual and probable consumption rating of the area. One speaker declared that he thought in most cases the best index of the consumptive rating per year



C. L. McKenzie, member of the Executive Council of the Code Authority

was the tonnage record for the preceding year in that area. Supplementary facts, however, are greatly desired by government authorities, to whom is delegated the task of finally approving a permissive area.

On the subject of production restriction which the code permits to some extent, Otho M. Graves appeared before the meeting to emphasize in a brief address, that producers of crushed stone, sand and gravel and slag by no means have signed away their rights to lower production costs, to meet new market demands by installation of improved machinery, nor to improve their general production methods. Heartily, he acknowledged the past services of machinery manufacturers and engineers in developing scientific and efficient production methods.

Code Costs

Speaking further on the subject of the expense of developing these codes, Mr. Graves mentioned that the total out-of-pocket expense for the three associations involved in the joint code had been approximately \$17,000. Beyond this sum, he stated that the expense went a great deal farther because of overhead items, not included in the out-of-pocket expense records. No appeal, however, was made at this meeting for the payment of assessment or for contributions. A motion was made and carried to approve the total approximate cost of \$60,000 for the code work so far. Another motion, carried unanimously, pledged the support of the members present to the Code Authority in its general administration of the code.

Operators of Floating Equipment Meet

Before final adjournment of the concurrent conventions and joint sessions of the National Crushed Stone Association, National Sand and Gravel Association, and National Slag Association, operators of floating equipment, held two meetings devoted especially to discussion of their problems under the code. They were held at the request of NRA Assistant Deputy Administrator Plimpton.

Paul P. Bird, president, Boston Sand and Gravel Co., Boston, Mass., acted as chairman of the first meeting at which recommendations of the labor advisors in Washington assigned to the aggregates industries code were considered. In establishing a separate set-up for a division such as the floating equipment operators, it is necessary to have very complete information on rates of pay, hour schedules, etc., and Stanton Walker, engineering director, National Sand and Gravel Association, was asked to continue his survey of the field in this regard. He presented a tentative questionnaire which will be mailed shortly to all members of this branch of the industry.

Establishment of Restrictive Areas

One of six round-table discussions held simultaneously was on the subject of production control. H. E. Rodes, president, Franklin Limestone Co., Nashville, Tenn.,

was chairman, assisted by Stanton Walker, engineering director of the National Sand and Gravel Association, and A. T. Goldbeck, engineering director of the National Crushed Stone Association.

At this meeting various specific plans for the work of the state committees in establishing permissive areas were discussed at length. Some state committees have sought to make their entire state a permissive area as a unit. Other states have sought to make each county a permissive area. One state would make each township a permissive area. The disadvantage of large permissive areas, from the standpoint of established producers, either fixed plant or portable, is that a producer within a permissive area may move around in that area as much as he pleases, so long as he does not add to its productive capacity. Hence, the smaller the permissive area the better, under usual conditions. It was brought out that the boundaries of permissive areas should be established political or geographical boundary lines, and not as in the case of one state where it was proposed to draw circles of 20-mile radius around each plant. The location of these circles on the landscape would be hard to determine.

Code Administration

Another round-table discussion with John Prince, president, Stewart Sand and Material Co., Kansas City, Mo., as chairman, was on various features of code administration. Here it was brought out that the relation of the state NRA administrator through district or regional code administrative bodies within a given state led to the final conclusion on the part of the majority present that the state and regional organizations rather than

the general state NRA administrator were responsible for the working out of the code. The state NRA representative, in some cases, however, might give particular attention to labor provisions of any code in which they do not seem to be working in harmony with the administration's views. It was said that NRA Assistant Deputy Administrator R. E. Plimpton, assigned for duty on the aggregates Code Authority had asked for a resolution from the Code Authority to show, as soon as possible, that the regional set-up was complete and that the industry was equipped to enforce trade practice agreements. In the light of this, it was thought that responsibility for administration of the code, at least after the resolution mentioned had been filed, would devolve at least 90% upon the district and regional organizations.

In regard to the question of the open-price filing it was again brought out here that district and not regional organizations can establish price zones.

It was admitted that open prices cannot be examined absolutely legally until a uniform cost accounting system is perfected.

One of the interesting questions, typical of those which focused the question of district jurisdiction, concerned ballast shipments moving on a no-freight basis from one district to another. The chairman gave it as his opinion that the sale in such case was consummated at the quarry when the company turned the ballast over to the railroad company and that the organization of the district into which it moved would not have jurisdiction.

The question of what constitutes an emergency in which the district organization may act without first consulting the regional committee was brought up and a case of one particular emergency which justified independent district action was given. Material had been delivered to a project which subsequently was condemned and the operator furnishing the material was faced with heavy demurrage charges. Therefore, he asked the district organization for authority to sell on the spot without regard to open price filings or minimum cost provisions. His request was granted on the condition that the district committee receive a statement of the transaction and also a certified copy of the order of condemnation. At this final round-table session on code administration, Mr. Prince was relieved temporarily by C. L. McKenzie and R. J. Potts who acted as co-chairman. There is no way of controlling through regulations thus far established, the meeting was told, projects of any government subdivision from township to the federal government itself, in opening up new plants even in permissive areas, if and when established.

Labor—Cost Accounting—Open Prices

The other round-table discussions were: (1) Open-price policies and cost determination, led by Alexander Foster, Jr., whose remarks at a later general session are re-



H. V. Owens, member of the Executive Council of the Code Authority

corded elsewhere; (2) hours of labor and rates of wages, led by E. Guy Sutton; (3) hours of labor and rates of wage on floating equipment, led by Paul P. Bird; (4) uniform cost accounting, led by Wm. E. Hilliard, general manager, New Haven Trap Rock Co., New Haven, Conn. Doubtless these were interesting and helpful, but like many a producer, the editors could not be in all meetings at the same time.

Registration—Producers

Acme Limestone Co., Alderson, W. Va.; J. A. Rigg.
 Albany Gravel Co., Inc., Albany, N. Y.; C. W. Maxwell.
 Alpha Sand Co., St. Louis, Mo.; A. C. Butterworth.
 American Aggregates Corp., Greenville, Ohio; Guy C. Baker, F. D. Coppock, C. Gray, M. F. Kerr, E. E. Mills, F. M. Welsh.
 American Brick Co., Inc., New Orleans, La.; Otto Schwartz.
 American Lime & Stone Co., Bellefonte, Penn.; S. M. Shallcross.
 American Limestone Co., Knoxville, Tenn.; W. W. Curnutt, R. P. Immel, Thos. McCroskey.
 Armitage, Zain, Lebanon, Ohio.
 Arrow Sand & Gravel Co., Columbus, Ohio; Paul R. Anderson, Stephen Stepanian.
 Arthur & Allen, Pueblo, Colo.; Arthur L. Allen.
 Arundel Corp., Baltimore, Md.; Edgar L. Wade.
 Ashland Lime Stone Co., Carter, Ky.; Kally Dokoff.
 Ashland Sand & Gravel Co., Ashland, Ky.; J. C. McLester.
 Barber Sand & Gravel Co., Cincinnati, Ohio; W. Barber.
 Barnes Sand & Gravel Co., Piketon, Ohio; C. M. Ault.
 Basic Dolomite, Inc., Cleveland, Ohio; R. H. Dow.
 Beam, Inc., C. C., Melvin, Ohio; C. C. Beam, F. O. Blehrn, Harry H. Brandon, W. V. Custis, R. W. Johnson.
 Bedford-Nugent Co., Evansville, Ind.; J. W. Bedford.
 Bedford Stone Products Co., Bedford, Ind.; Marshall Miller.
 Berks Products Corp., Reading, Penn.; W. H. Fehr.
 Big Rock Stone & Material Co., Little Rock, Ark.; R. S. Wilson.
 Bird & Co., Inc., William M., Columbia, S. C.; R. L. Kerr, Jr.
 Birmingham Slag Co., Birmingham, Ala.; C. E. Ireland, G. C. McCullough.
 Blake Bros. Co., San Francisco, Cal.; Anson S. Blake.
 Blanton Stone Co., Frankfort, Kentucky; Mrs. James R. Thompson, James R. Thompson.
 Bloomer, John F., Appleton, Wis.; John F. Bloomer.
 Blue Ridge Stone Corp., Roanoke, Va.; Abney Boxley, L. J. Boxley.
 Boston Sand & Gravel Co., Boston, Mass.; Paul P. Bird.
 Brannan Sand & Gravel Co., J. W., Denver, Colo.; F. P. Sprathlen, Jr.
 Brewer & Brewer Sons, Inc., Chillicothe, Ohio; W. O. Brewer.
 Brown Huffstetter Material Co., Indianapolis, Ind.; Albert M. Brown.
 Brown-Rosenbarger Gravel Co., Indianapolis, Ind.; Herbert E. Brown, Chas. Rosenbarger.
 Buffalo Crushed Stone Co., Buffalo, N. Y.; A. J. Hooker, James Savage.
 Buffalo Gravel Corp., Buffalo, N. Y.; Frank X. Ernst.
 Buffalo Slag Co., Buffalo, N. Y.; H. N. Snyder.
 Builders Material Co., Cedar Rapids, Iowa; S. P. Moore.
 C. W. A., Los Angeles, Calif.; L. L. Rogers.
 Callanan Road Improvement Co., South Bethlehem, N. Y.; J. R. Callanan.
 Campbell Sons Co., Harry T., Towson, Md.; Bruce S. Campbell.
 Canada Crushed Stone Corp., Ltd., Hamilton, Ont.; W. H. Lindsay.
 Carbon Limestone Co., Youngstown, Ohio; H. W. Feather, P. E. Helm, Jos. H. Jackson, R. C. Shepherd.
 Carnegie Steel Co., Pittsburgh, Penn.; E. L. Flad.
 Carpenter, H. A., St. Marys, W. Va.
 Cedar Bluff Quarry, Princeton, Ky.; W. C. Sparks.
 Central Rock Co., Lexington, Ky.; T. W. Havelly, W. Bruce Isaacs.
 Central Rock & Sand Co., Kingsport, Tenn.; H. C. Brooks.



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Central Sand & Gravel Co., Des Moines, Iowa; Gaylord E. Gray.
 Central Sand & Gravel Co., Memphis, Tenn.; L. T. McCourt.
 Cerulean Stone Co., Henderson, Ky.; N. Powell Taylor.
 Chicago Gravel Co., Chicago, Ill.; G. W. Renwick, John Sankey.
 Chillicothe Sand & Gravel Co., Chillicothe, Ohio; H. C. Slater.
 Cincinnati Quarries Co., Cincinnati, Ohio; George W. Doran.
 City Motor Trucking Co., Portland, Ore.; Porter W. Yett.
 Cobb & Homewood, Chapel Hill, N. C.; Collier Cobb, Jr.
 Columbia Quarry Co., St. Louis, Mo.; E. J. Krause.
 Concrete Materials Co., Sioux Falls, S. D.; C. A. Wagner.
 Concrete Products Co. of Absecon, N. J.; Absecon, N. J.; Robert E. White.
 Connecticut Quarries Co., Inc., New Haven, Conn.; Elwood T. Nettleton, A. L. Worthen.
 Connecticut State Highway Dept., Hartford, Conn.; E. C. Welden.
 Connelly, N. D., Chicago, Ill.
 Connersville Gravel Co., Inc., Connersville, Ind.; Clyde Piper.
 Consolidated Quarries Corp., Atlanta, Ga.; A. B. Kirkman.
 Consolidated Rock Products Co., Los Angeles, Calif.; Ford J. Twaits.
 Consumers Co., Chicago, Ill.; W. J. Wormer.
 Cook Stone Co., Hopkinsville, Ky.; R. C. White.
 Cooley Gravel Co., Chillicothe, Mo.; C. G. Cooley.
 Cumberland River Sand Co., Nashville, Tenn.; R. N. Coolidge.
 Curtis-Hill Gravel & Sand Co., Philadelphia, Penn.; H. F. Curtis.
 Cushing Stone Co., Schenectady, N. Y.; J. E. Cushing.
 Daffer (C. O.) Gravel & Sand Co., West Carrollton, Ohio; C. O. Daffer.
 Davidson Granite Co., Lithonia, Ga.; J. K. Davidson.
 Davison (J. K.) & Bro., Pittsburgh, Penn.; H. S. Davison, H. H. Stewart.
 Denton Sand & Gravel Co., St. Louis, Mo.; J. W. McCullough.
 Dillman Industries, Inc., Caruthersville, Mo.; K. W. Dillman.
 District 3, Region 8, Wilmington, Ohio; George F. Driscoll, M. Jane Sharkey.
 Dixie Sand & Gravel Corp., Chattanooga, Tenn.; W. Jess Brown, W. H. Klein.
 Dolceto Quarry Co., Birmingham, Ala.; R. D. Beatty.
 Dolese Bros. Co., Chicago, Ill.; Henry Dolese.
 Dolomite Products Co., Rochester, N. Y.; Harvey N. Clark.
 Dugan, J. N., Cincinnati, Ohio; J. N. Dugan.
 Duquesne Slag Products Co., Pittsburgh, Penn.; C. L. McKenzie, A. N. Spice.
 Dyer Quarry Co., John T., Norristown, Penn.; F. T. Gucker, Earl G. Souders.
 East St. Louis Stone Co., East St. Louis, Ill.; Ralph E. McLean.

East Texas Gravel Co., Dallas, Tex.; Howard Parks.
 Eastern Rock Products, Inc., Utica, N. Y.; L. B. Gray, R. M. Kelly, C. A. Munz, H. V. Owens, J. H. Wagoner.
 Eastern Sand & Gravel Co., Philadelphia, Penn.; Jos. F. Burke, John B. Sullivan.
 Elkhart-Moraine Sand & Gravel Co., Elkhart Lake, Wis.; A. A. Laun.
 Elmhurst Chicago Stone Co., Elmhurst, Ill.; M. M. Bales, Geo. F. Hammerschmidt, Martin Hammerschmidt, C. J. Hartley.
 Erie Stone Co., Toledo, Ohio; E. H. France, N. E. Kelb.
 Estill Springs Sand & Gravel Co., Nashville, Tenn.; W. B. Halley, Jno. A. Mifford.
 Fanwood Stone Crushing & Quarry Co., Westfield, N. J.; W. H. Weldon, Jr.
 Federal Crushed Stone Corp., Buffalo, N. Y.; H. E. Rainer, Harris N. Snyder.
 Flint Crushed Gravel Co., Des Moines, Iowa; R. C. Fletcher.
 Flint Sand & Gravel Co., New Orleans, La.; C. O. Harris.
 Fort Worth Sand & Gravel Co., Fort Worth, Tex.; T. C. Poppewell.
 France Stone Co., Toledo, Ohio; H. C. Gilbert, Dr. H. F. Kriege, H. M. Sharp.
 Franklin Limestone Co., Nashville, Tenn.; H. E. Rodas.
 Frederick (A.) Sand & Gravel Co., Johnstown, N. Y.; Mrs. J. D. Moynahan.
 General Concrete Products Corp., Warren, Penn.; F. Haggerty.
 General Crushed Stone Co., Easton, Penn.; H. B. Allen, A. G. Barres, Otho M. Graves, T. A. Lanagan, F. F. McLaughlin, F. C. Owens, John Rice, John Rice, Jr., A. G. Seitz, George E. Schaefer, W. L. Spornborg.
 Genesee Stone Products Corp., Batavia, N. Y.; C. L. Buchholtz, A. B. Caldwell.
 Georgia Gravel Co., Columbus, Ga.; C. F. Mullen.
 Gifford-Hill Co., Inc., Dallas, Tex.; J. Rutledge Hill, H. M. Lacy.
 Glacier Sand & Stone Co., Islington, Mass.; Edward O'Toole.
 Goodwin-Gallagher Sand & Gravel Co., New York, N. Y.; E. D. Boylston.
 Gould & Cross, Grand Rapids, Mich.; Edwin Cross.
 Graham Bros., Inc., Los Angeles, Calif.; Paul C. Graham, H. F. G. Pelsue.
 Grand Rapids Gravel Co., Grand Rapids, Mich.; H. N. Battjes.
 Gravel Products Corp., Buffalo, N. Y.; Ernest M. Hammond.
 Great Lakes Steel Corp., Detroit, Mich.; K. A. Dietrich, W. W. Lavers.
 Greenfield (Mass.) Broken Stone Co., Greenfield, Mass.; Henry O. Robinson.
 Greenfield Quarries Co., Greenfield, Ohio, Ft. Square; W. A. Handley.
 Haas Gravel Co., Clayton, Ohio; Harold H. Haas.
 Holston Quarry Co., Knoxville, Tenn.; R. S. Campbell.
 Hamilton Gravel Co., Hamilton, Ohio; W. P. Watson.
 Hart Gravel Co., Worthington, Ind.; Don R. Hart.
 Hedrick (B. V.) Gravel & Sand Co., Lilesville, N. C.; B. V. Hedrick.
 Hendy, Michael, St. Louis, Mo.
 Herkimer Quarries, Inc., Newport, N. Y.; C. A. Powers.
 High Rock Products Co., Evansville, Ind.; R. W. Meisinger.
 Holloway Gravel Co., Inc., Amite, La.; H. H. Holloway.
 Hopkinsville Stone Co., Hopkinsville, Ky.; A. M. Andrew.
 Howard Concrete Products Co., Cincinnati, Ohio; Walter E. Howard.
 Hugo Sand & Gravel Co., Kent, Ohio; Sam W. McClary.
 Ideal Sand & Gravel Co., Mason City, Iowa; C. E. Thomas.
 Illinois Slag & Ballast Co., Chicago, Ill.; L. E. McDermut.
 Indiana Gravel Co., Indianapolis, Ind.; Jesse A. Shearer.
 Indianapolis Sand & Gravel Co., Indianapolis, Ind.; H. O. Dodson.
 Inland Lime & Stone Co., Manistique, Mich.; A. J. Cayia.
 Interstate Sand & Gravel Co., Terre Haute, Ind.; H. L. McGurk.
 Jackson & Squire, Sandburn, Ind.; R. L. Squire.
 Jahncke Service, Inc., New Orleans, La.; C. O. Harris.
 Jointa Lime Co., Glen Falls, N. Y.; H. J. Russell.
 Kanawha Sand Co., Parkersburg, W. Va.; C. Z. Ruth.
 Kansas Sand Co., Topeka, Kan.; Otto Kuehne, Jr.
 Karch (John W.) Stone Co., Celina, Ohio; Ben H. Cartwright.
 Kelley Island Lime & Transport Co., Cleveland, Ohio; F. W. Ohlemacher.

Kentucky Consolidated Stone Co., Louisville, Ky.; Verne C. Morgan.
 Kentucky-Virginia Stone Co., Middlesboro, Ky.; W. B. Paynter.
 Keystone Gravel Co., Dayton, Ohio; D. S. Foland.
 Keystone Sand & Supply Co., Pittsburgh, Penn.; W. A. Bliss.
 Killins Gravel Co., Ann Arbor, Mich.; G. E. Killins.
 Kimble Sand Gravel Co., Hamilton, Ohio; Clarence A. Kimble.
 Kirkpatrick Gravel Co., Cambridge City, Ind.; H. L. Smith.
 Knoxville Sand & Gravel Material Co., Knoxville, Tenn.; R. E. Gettys, Jr.
 L. & M. Stone Co., Utica, N. Y.; William McGrew.
 Lake Shore Sand & Gravel Co., Milwaukee, Wis.; A. J. Blair.
 Lane & Son, Inc., John S., Meriden, Conn.; A. S. Lane.
 Laura Gravel & Stone Co., Phillipsburg, Ohio; J. E. Baker, Roger Baker, Ed. Mattis.
 Lehigh Stone Co., Kankakee, Ill.; M. Edgeworth, W. R. Sanborn.
 LeRoy Lime & Crushed Stone Corp., LeRoy, N. Y.; J. L. Heimlich.
 Lewis (L. W.) Sons, Emporia, Kan.; W. J. Lewis.
 Liberty Limestone Corp., Rocky Point, Va.; J. W. Stull.
 Lime Bluff Co., Muncy, Penn.; Chas. C. Hartsook.
 Lincoln Sand & Gravel Co., Lincoln, Ill.; V. O. Johnston, R. E. Weaver.
 Mann, Lance, Russellville, Ohio.
 Marble Cliff Quarries Co., Columbus, Ohio; E. J. Kaufman, Russell Rarey.
 Marion Sand & Gravel Co., Marion, Ohio; W. H. Symes.
 Marsman & Taber, Grand Rapids, Mich.; C. Marsman.
 Massachusetts Broken Stone Co., Stony Brook, Mass.; Richard Robinson.
 John McCourt Co., Boston, Mass.; F. M. McCourt.
 McCrady Rodgers Co., Pittsburgh, Penn.; Phil. K. Rodgers.
 McGrath Sand & Gravel Co., Lincoln, Ill.; C. L. Luker, T. E. McGrath.
 Meshberger Bros. Stone Co., Linn Grove, Ind.; J. R. Hardendorf.
 Miami Gravel Co., Huntington, W. Va.; Jas. R. Davidson.
 Michigan Limestone & Chemical Co., Rogers City, Mich.; R. B. Henley.
 Mid-West Rock Products Corp., Indianapolis, Ind.; L. R. Cartwright.
 Mildman Improvement Corp., Rochester, N. Y.; John E. Redman.
 Millard (H. E.), Annville, Penn.; E. D. Williams.
 Millville Gravel Co., Hamilton, Ohio; G. E. Shaw.
 Missouri-Kansas-Oklahoma-Chat Association, Pittsburgh, Kan.; Scott A. Fones.
 Monon Crushed Stone Co., Monon, Ind.; George H. Balfe.
 Montgomery Gravel Co., Montgomery, Ala.; C. E. Ireland.
 Morton Sand & Gravel Co., Chicago, Ill.; George H. Harton.
 Mt. Carmel Sand & Shovel Co., Mt. Carmel, Ill.; V. N. Rehnquist.
 Muskingum River Gravel Co., Zanesville, Ohio; H. D. Stillion.
 Nading (Wm.) Grain Co., Gravel Division, Shelbyville, Ind.; H. W. Reimann.
 National Crushed Stone Association, Washington, D. C.; J. R. Boyd, Beulah Davies, A. T. Goldbeck, Ruth E. Shauck.
 National Lime & Stone Co., Findlay, Ohio; G. F. Atkins, G. Knoblauch, R. G. Spencer.
 National Sand & Gravel Association, Washington, D. C.; V. P. Ahearn; Stanton Walker.
 National Slag Co., Allentown, Penn.; John M. Buckland.
 National Slag Association, Cleveland, Ohio; H. J. Love.
 National Stone Co., Joliet, Ill.; W. N. Carter.
 Neal Gravel Co., Mattoon, Ill.; B. E. Neal, E. Guy Sutton.
 Newark Sand & Gravel Co., Newark, Ohio; J. E. Noelp.
 New Castle Lime & Stone Co., New Castle, Penn.; W. W. Duff.
 New Haven Trap Rock Co., New Haven, Conn.; Wm. E. Hilliard.
 New Point Stone Co., Inc., Batesville, Ind.; Theo. Wanstrath.
 New York Trap Rock Corp., New York City; Wilson P. Foss, Jr., Stirling Tomkins.
 Noone Sand & Gravel Co., George H., Boston, Mass.; Ava M. Noone.
 North American Cement Corp., Baltimore, Md.; A. R. Couchman.
 North Cincinnati Sand & Gravel Co., Cincinnati, Ohio; Chas. K. Oberle.
 North Jersey Quarry Co., Morristown, N. J.; F. W. Schmidt, I. W. Wortman.
 Northern California Region 15, San Francisco, Calif.; E. J. Goodpastor.

Northern Gravel Co., Muscatine, Iowa; E. W. Boynton, III, E. W. Boynton, Jr., C. E. Graebner.
 Oak Hill Gravel Co., Springfield, Ohio; George Guthrie.
 O'Connor & Sons, J. C., Ft. Wayne, Ind.; L. W. Hegler.
 Ohio Gravel Co., Cincinnati, Ohio; H. R. Birchall, Fred W. Cornuelle, F. E. Hall, E. M. Trittschuh, Earl Zimmerman.
 Ohio Highways; Geo. W. Kerr.
 Ohio Marble Co., Piqua, Ohio; Mrs. A. Acton Hall, A. Acton Hall, F. J. Heinritz.
 Ohio River Sand Co., Louisville, Ky.; H. P. Caldwell, J. H. Duffy, J. M. Settle.
 Ohio River Sand & Gravel Co., Parkersburg, W. Va.; Lyle D. Vincent.
 Old Colony Crushed Stone Co., Quincy, Ill.; E. R. Atwood.
 Oil City Sand & Gravel Co., Oil City, Penn.; Charles A. Smith.
 Olive Hill Limestone Co., Olive Hill, Ky.; J. H. Mobley.
 Ontario Sand & Gravel Co., Inc., Geneva, N. Y.; H. B. Graves.
 Palmetto Quarries Co., Columbia, S. C.; G. D. Lott.
 Peck-Woolf Sand & Material Co., Kansas City, Mo.; F. W. Peck.
 Pickitt & Goodwin, Allegan, Mich.; Harry Pickitt.
 Pioneer Sand & Gravel Co., Seattle, Wash.; Geo. W. Gauntlett.
 Pittsburgh Limestone Co., Pittsburgh, Penn.; Arthur W. Worthington.
 Portsmouth Sand & Gravel Co., Portsmouth, Ohio; F. C. Fuller.
 Potts-Moore Gravel Co., Waco, Tex.; R. J. Potts.
 Pounding Mills Quarry Corp., Pounding Mills, Va.; C. M. Hunter.
 Price (W. T.), Inc., Miami, Fla.; W. T. Price.
 Qualkinbush Bros., Paoli, Ind.; William Qualkinbush.
 Rack (George L.), Inc., Cincinnati, Ohio; George L. Rack.
 Radford Limestone Co., Inc., East Radford, Va.; H. S. Slocum.
 Raleigh Granite Co., Raleigh, N. C.; W. T. Ragland.
 Ray & Son Sand & Gravel Co., Louisiana, Mo.; Earl Ray.
 Reader (S. J.) Co., Minneapolis, Minn.; S. J. Reader.
 Regional Code Committee, Columbus, Ohio; Claude L. Clark.
 Reinhold Co., Inc., Pittsburgh, Penn.; P. B. Reinhold.
 Richey Sand & Gravel Co., Lyman, Omaha, Neb.; Fred P. Curtis.
 Richmond Gravel Co., Richmond, Ind.; R. H. Koehring.
 Ripley County Construction Co., Batesville, Ind.; H. J. Dean.
 River Sand & Gravel Co., Owensboro, Ky.; P. A. Yager.
 Rock Hill Quarries Co., St. Louis, Mo.; H. E. Billman.



Alexander Foster, Jr., member of the Executive Council of the Code Authority

Rowe Contracting Co., Malden, Mass.; Harold R. Brownson.
 Rubber City Sand & Gravel Co., Akron, Ohio; H. I. G. Knight.
 St. Louis Material & Supply Co., St. Louis, Mo.; Otto S. Conrades.
 Sand Products Corp., Detroit, Mich.; Mart T. McKee.
 Seaboard Sand & Gravel Corp., New York, N. Y.; Anderson Dana.
 Shiely Co., Inc., J. L., St. Paul, Minn.; J. L. Shiely.
 Snouffer (J. & L.), Dublin, Ohio, Ft. Square; L. L. Snouffer.
 South Bend Sand & Gravel Corp., South Bend, Ind.; J. B. Christman.
 Southern Aggregates Corp., Birmingham, Ala.; W. L. Caldwell.
 Southern Ohio Quarries Co., Chillicothe, Ohio; Dick Onell.
 Southern Sand & Gravel Co., Selma, Ala.; H. G. Boyd.
 Southwest Stone Co., Dallas, Texas; W. F. Wise.
 Speedway Gravel Co., Indianapolis, Ind.; Jesse Sanford.
 Springfield-Pekin Sand & Gravel Co., Springfield, Ill.; D. H. O'Keefe.
 Standard Lime Stone Co., Baltimore, Md.; C. H. Slater.
 Standard Lime & Stone Co., Martinsburg, W. Va.; W. J. Young.
 Standard Slag Co., Youngstown, Ohio; W. E. Bliss, Fred Hubbard, W. H. Kelcawley, George H. Richardson.
 Stewart Sand & Material Co., Kansas City, Mo.; John Prince.
 Stolle Quarry & Contracting Co., Casper, E. St. Louis, Ill.; F. W. Stolle.
 Stonestreet & Hogue, Garrett, Ind.; Frank Hogue, Wm. Stonestreet.
 Strathmann Sand & Gravel Co., Paulsboro, N. J.; Henry W. Peterson.
 Sturm & Dillard Co., Columbus, Ohio; John Dillard, Chas. H. Pardum.
 Suiter Material & Transport Co., Manchester, Ohio; R. C. Henderson, J. W. McGuffin, T. L. Suiter.
 Tejan (Frank), Dayton, Ohio; Frank Tejan.
 Tennessee Valley Sand & Gravel Co., Sheffield, Ala.; L. E. Willson.
 Tiffany Sand & Gravel Co., Milwaukee, Wis.; Fred T. Kern.
 Tooley Gravel Co., Gosport, Ind.; R. E. Long.
 Trap Rock Co., Minneapolis, Minn.; John Wunder.
 Tygart Limestone Co., Lawton, Ky.; H. W. Hillman.
 U. S. Bureau of Mines, Washington, D. C.; H. H. Hughes, Scott Turner.
 Union Limestone Co., New Castle, Penn.; Wm. M. Andrews.
 Union Sand & Gravel Co., Huntington, W. Va.; Edwin P. May, J. L. Richmond.
 Utah Sand & Gravel Prod. Corp., Salt Lake City, Utah; Eric Ryberg.
 Van Camp Sand & Gravel Co., Cincinnati, Ohio; J. H. Liggett, R. E. Van Camp.
 Wallace Stone Co., Bay Port, Mich.; W. H. Wallace, Jr.
 Ward Sand & Gravel Co., Oxford, Mich.; L. J. Dyament.
 Warner Co., Philadelphia, Penn.; Alexander Foster, Jr., Charles Warner.
 Watson, M. W., Contractor, Topeka, Kan.
 West Roxbury Trap Rock Co., West Roxbury, Mass.; Frank J. Long, Bernard A. McKinney.
 West Sand Co., Muskogee, Okla.; H. E. West.
 West Virginia Sand & Gravel Co., Charleston, W. Va.; Geo. E. Sutherland.
 West Virginia State Committee; P. J. Walsh.
 Western Hills Sand & Gravel Co., Cleves, Ohio; C. C. Sanders.
 Western Indiana Gravel Co., LaFayette, Ind.; M. A. Neville, W. H. Sanders.
 Western Pennsylvania Sand & Gravel Association, Pittsburgh, Penn.; Ray V. Warren.
 Western Sand & Gravel Co., Lincoln, Neb.; W. M. Stone.
 Weston & Brooker Co., Columbia, S. C.; T. I. Weston.
 Willey-Ruckstuhl Co., Cincinnati, Ohio; Edwin W. Ruckstuhl.
 Williams (Harold), Boston, Mass.
 Wilson Sand & Supply Co., Huntington, W. Va.; A. B. Rawn.
 Woodstock Slag Corp., Birmingham, Ala.; Geo. A. Mattison, Jr.
 Woodward Construction Co., Rock Springs, Wyo.; M. W. Woodward.
 Wooley Quarry, S. M., Marion, Ohio; S. M. Wooley.
 Young (Chas. H.) Co., Minneapolis, Minn.; C. H. Young.
 Zanesville Gravel Co., Dresden, Ohio; J. J. Gorman.

Registration—Manufacturers

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.; J. C. Collier, Irving K. Cox, Abe Goldberg, H. W. Schaub, H. Schiffman.
 American Manganese Steel Co., Chicago

Heights, Ill.; A. L. Blakemore, Bradley S. Carr, Perry Nagle.
 American Sealdrok Corp., Chicago, Ill.; W. H. Rogers.
 Atlas Powder Co., Wilmington, Del.; G. T. Erickson, W. L. Shield.
 Austin Powder Co., Cleveland, Ohio; Robert S. Papworth.
 Bennett Co., W. H. K., Chicago, Ill.
 Bay City Shovels, Inc., Bay City, Mich.; Frank A. Phillips.
 Bennett Co., W. H. K., Chicago, Ill.
 Bethlehem Steel Co., Bethlehem, Penn.; M. L. Jacobs, J. Mayer.
 Buchanan Co., Inc., C. G., Birdsboro, Penn.; George H. Keppel.
 Bucyrus-Erie Co., South Milwaukee, Wis.; E. G. Lewis, F. O. Wyse.
 Buffalo Wire Works Co., Buffalo, N. Y.; Wm. D. O'Neill.
 Burton Explosives, Inc., Cleveland, Ohio; W. O. Dunn, M. S. Kincaid.
 Chain Belt Co., Milwaukee, Wis.; L. B. McKnight.
 Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio; L. P. Darnell, John W. Reed, Clark M. Young.
 Colonial Supply Co., Louisville, Ky.; B. H. Collings.
 Cross Engineering Co., Carbondale, Penn.; T. McC. Black, H. M. Davison, J. H. Fulkerson, E. J. Moch, H. S. Woodward.
 Du Pont (E. I.) de Nemours & Co., Inc., Wilmington, Del.; J. W. Koster, W. W. Phillips, S. R. Russell, Edwin T. Wolf.
 Eagle Iron Works, Des Moines, Iowa; Theo. Aulmann, C. B. Laird.
 Ensign-Bickford Co., Simsbury, Conn.; S. S. Ellsworth.
 Frog Switch & Manufacturing Co., St. Louis, Mo.; H. A. Johann.
 General Electric Co., Schenectady, N. Y.; Karl H. Runkle, L. W. Shugg.
 General Explosive Corp., Latrobe, Penn.; G. C. Holton, L. E. Whitlock.
 Hendrik Manufacturing Co., Carbondale, Penn.; D. M. Blackburn, Bruce G. Shotton.
 Illinois Powder Manufacturing Co., St. Louis, Mo.; A. H. Bassler, James R. Little, C. W. Swanson.
 Kennedy-Van Saun Manufacturing & Engineering Corp., New York City; F. O. Reedy.
 Leschen & Sons Rope Co., A., St. Louis, Mo.; W. Berninger.
 Link-Belt Co., Chicago, Ill.; C. S. Huntington, Jess Richards.
 Loomis Machine Co., Tiffin, Ohio; Herbert Epperson.
 Ludlow-Saylor Wire Co., St. Louis, Mo.; Frank B. Ungar.
 Marion Steam Shovel Co., Marion, Ohio; Harvey T. Gracely.
 Niagara Screen Co., Cleveland, Ohio; A. E. Owen.
 Nordberg Manufacturing Co., Milwaukee, Wis.; O. C. Gruender, J. M. Thistlewaite.
 Northern Blower Co., Cleveland, Ohio; M. A. Eiben.
 Northwest Engineering Co., Chicago, Ill.; J. C. French.
 Page Engineering Co., Chicago, Ill.; Franklin Miner.
 Pennsylvania Crusher Co., Philadelphia, Penn.; Gordon Buchanan.
 Pit & Quarry, Chicago, Ill.; Wm. E. Coates, W. H. Sanderson, W. E. Trauffer.
 Robins Conveying Belt Co., New York City; Wm. Goedecke, John F. Meissner.
 Rock Products, Chicago, Ill.; Geo. M. Earnshaw, H. K. Ferguson, L. A. Koch, Nathan C. Rockwood.
 John A. Roebbling's Sons Co., Trenton, N. J.; J. Fennell Berger, P. G. MacIntosh.
 Sauerman Bros., Inc., Chicago, Ill.; D. D. Guilfoil.
 Taylor Wharton Iron & Steel Co., High Bridge, N. J.; C. B. Andrews, J. R. Van Renesselaer.
 Thew Shovel Co., Lorain, Ohio; M. B. Garber.
 Traylor Engineering & Manufacturing Co., Allentown, Penn.; D. A. Cheyette, S. W. Traylor.
 Troco Lubricating Co., Philadelphia, Penn.; Lucius Beebe.
 Trojan Powder Co., Allentown, Pa.; H. B. Srodes.
 Tyler (W. S.) Co., Cleveland, Ohio; Albert E. Reed.
 Universal Crusher Co., Cedar Rapids, Iowa; E. A. Velde.
 Wickwire Spencer Steel Co., Gasport, N. Y.; W. E. Foote.

"Economic Availability"

The code of fair competition for the mineral aggregate industries in the provision against increase in productive capacity in a permissive area contains the phrase "economically available from existing production

facilities." Various ways of defining this phrase were proposed such as a limiting freight haul, trucking limit, etc.

One or two producers offered the interesting suggestion of *intangibles*—as for example the standby value of established plants to a community for service in furnishing construction materials in emergencies such as floods, earthquakes, fires, etc. Other intangibles are of course the ability to help support the community with taxes, payment of wages, etc.

Banquet Address—Safety Awards

THE CHIEF event at the joint banquet of the National Crushed Stone Association, National Sand and Gravel Association, and National Slag Association was the award of safety trophies and certificates to winners of the national contests, by Scott Turner, director of the United States Bureau of Mines.

The names of the winners of the National Crushed Stone Association's *Explosives Engineer* award; and of the National Sand and Gravel Association's *Rock Products* award will be published in a subsequent issue.

The very able toastmaster at the banquet was Robert J. Potts, president, Potts-Moore Gravel Co., Waco, Texas, past president of the National Sand and Gravel Association. The principal speaker was Col. Willard T. Chevalier, vice-president, McGraw-Hill Co., who has a happy faculty of being able to expound theories of economics and political philosophy in interesting and understandable language. The substance of his address was that most of our economic ills were brought on by speculating or gambling in paper representing wealth in commodities and capital goods, not from overproduction, rather from over-surpluses of credit wrongly used.



H. N. Snyder, member of the Executive Council of the Code Authority

Pulverized Limestone Producers Between Two Fires

IN CONNECTION with the annual convention of the National Crushed Stone Association at Cincinnati, Ohio, January 22-26, producers of pulverized limestone, chiefly for agricultural purposes, held an informal meeting under the leadership of W. W. Duff, New Castle Lime & Stone Co., New Castle, Penn. The chief topic of discussion was the bid of certain pulverized limestone producers, organized as the National Limestone Processors Association, for a place under the code of the Lime Industry.

Most of those present had had no previous information in regard to the organization and plans of the National Limestone Processors Association and were opposed to operating under the lime code. The matter was referred to the Code Authority of the Crushed Stone, Sand and Gravel and Slag Industries for its recommendations. It is an example of one of many conflicts that are bound to arise in the application of codes to overlapping and interwoven industries. Presumably these will be settled in time by coöperation between the various code authorities with the help of the NRA.

What the limestone processors who promoted the plan apparently want, is to take advantage of the marketing plan already established in the lime industry, and yet to be worked out in the crushed stone industry. Also some limestone products, as for example precipitated calcium carbonate from some chemical industries, are not "crushed stone." On the other hand the limestone processors aim to include such products as chicken grits, and chicken grits need not necessarily be *limestone*; as a matter of fact a very considerable tonnage is made from granite.

Manufacturers' Divisions Hold Joint Meeting

A JOINT dinner meeting of the manufacturers' division of the National Crushed Stone Association and of the National Sand and Gravel Association was held in Cincinnati, January 23, in connection with the annual conventions of the two organizations. All members present were sounded out by the joint chairmen—Abe Goldberg, Allis-Chalmers Manufacturing Co., and D. D. Guilfoil, Sauerman Bros. Co.—in respect to their views on having an exhibit the following year. Sentiment was favorable, but the majority felt it necessary to leave the initiative to the two national associations.

The following resolution was adopted:

"Looking to the future and assuming that there will be occasions when the National Crushed Stone Association and the National Sand and Gravel Association will meet in concurrent conventions, making it possible for the manufacturers' divisions of the two associations to hold joint exhibitions of equipment, and in order to simplify the manage-

ment of such joint exhibitions and to avoid conflict of authority—

"Be it resolved, that this meeting authorizes the chairman of the two manufacturers' divisions to select a director of exhibits, when, as and if it is decided to hold a joint exhibition, who will have sole authority over allotment of space, arrangement of exhibits and registrations of manufacturers; this director to receive no salary, but to be reimbursed for expenses incurred; payment to be made from gross income of the exhibition after his expense account has been audited and approved by the chairman of the two manufacturers' divisions."

Officers Elected

The following officers were elected to the manufacturers' division of the National Sand and Gravel Association: C. S. Huntington, Link-Belt Co., Chicago, Ill., chairman; vice-chairmen: J. F. Berger, John A. Roebeling's Sons Co., Trenton, N. J.; Bradley S. Carr, American Manganese Steel Co., Chicago Heights, Ill.; H. T. Gracely, Marion Steam Shovel Co., Marion, Ohio; Delbert Kay, Nordberg Manufacturing Co., Milwaukee, Wis.; Bruce G. Shotton, Hendrick Manufacturing Co., Carbondale, Penn.; L. W. Shugg, General Electric Co., Schenectady, N. Y.; W. L. Wettlaufer, Niagara Concrete Mixer Co., Buffalo, N. Y.

The following officers were elected to the manufacturers' division of the National Crushed Stone Association:

F. O. Wyse, Bucyrus-Erie Co., South Milwaukee, Wis., chairman. Vice-chairmen: Gordon Buchanan, Pennsylvania Crusher Co., Philadelphia, Penn.; Lucius Beebe, Troco Lubricating Co., Philadelphia, Penn.; M. S. Lambert, Robins Conveying Belt Co., New York City; S. R. Russell, E. I. du Pont de Nemours & Co., Wilmington, Del.; C. S. Huntington, Link-Belt Co., Chicago, Ill. Board of directors (in addition to above): R. C. Johnson, Simplicity Engineering Co.; E. C. Bauer, Kensington Steel Co.; J. Barab, Hercules Powder Co.; G. M. Dyke, Stearns Conveyor Co.; H. T. Gracely, Marion Steam Shovel Co.; Delbert Kay, Nordberg Manufacturing Co.; W. H. Milroy, Earl C. Bacon Co.; Carl Swanson, Illinois Powder Co.; F. B. Ungar, Ludlow Taylor Wire Co.; W. L. Wettlaufer, Niagara Concrete Mixer Co.; M. S. Kincaid, Burton Explosive Co.; B. G. Shotton, Hendrick Manufacturing Co.; L. W. Shugg, General Electric Co.; S. W. Traylor, Jr., Traylor Engineering and Manufacturing Co.; Albert E. Reed, W. S. Tyler Co.

Construction Industry's Code Signed by President

PRESIDENT ROOSEVELT signed the Code of Fair Competition for the Construction Industry, January 31. It becomes effective February 27. It has been four months in the NRA mill and the subject of bitter controversy, especially with union building trades.

The President, in approving the code, requested that the national construction plan-



F. D. Wyse, Chairman, Manufacturers' Division, N. C. S. A.

ning and adjustment board it creates take immediate steps to find a solution for jurisdictional disputes, the interunion controversies which in the past have tied up millions of dollars worth of work while labor groups fought over which one should do some part of the building work.

The new board will be half labor, half industrial, with 20 members under leadership of a presidential appointee. There will be supplementary regional boards and other measures for safeguarding labor interests.

Slate Industry Code Approved

NATIONAL Recovery Administrator Hugh S. Johnson announced signing of the Code of Fair Competition for the Slate Industry, January 22.

In his letter to the President informing him of his approval of the code, Administrator Johnson said that the industry is heavily burdened by depression, by stagnant construction, heavy losses and by the rival



C. S. Huntington, Chairman, Manufacturers' Division, N. S. G. A.

materials. The value of its products in 1925 was given as over \$9,000,000. In 1932 the value of its products was less than \$2,000,000. The Administrator stated that due to the conditions which have contributed to the decrease in business, it is doubtful whether the adoption of the code will result in a large immediate increase in employment.

Sand-Lime Brick Manufacturers Seek Code

THE Sand Lime Brick Association, representing 75% of the industry, has submitted a proposed code of fair competition. The public hearing will be held in the Virginia room, Lee House, Washington, D. C., February 8.

Sand-Lime Brick Production and Shipments in December

THE following data are compiled from reports received direct from producers of sand-lime brick located in various parts of the United States and Canada. The accompanying statistics may be regarded as representative of the industry.

Ten sand-lime brick plants reported for the month of December, this number being one more than the number reporting for the month of November, statistics for which were published December 25.

Average Prices for December

Shipping point	Plant price	Delivered
Madison, Wis. ....	.....	\$12.50
Dayton, Ohio	\$11.50	12.50
Mishawaka, Ind.	8.50	.....
Grand Rapids, Mich. ....	.....	12.00
Saginaw, Mich.	10.00	.....
Syracuse, N. Y.	18.00	20.00
Detroit, Mich. ....	.....	11.00
Toronto, Ont., Can.	12.00	13.50

Statistics for November and December

	†November	*December
Production	1,430,975	600,745
Shipments (rail)	773,000	.....
Shipments (truck)	642,190	800,190
Stocks on hand	1,484,768	2,010,278
Unfilled orders	1,775,000	75,000
†Nine plants reporting; incomplete, five not reporting unfilled orders.		
*Ten plants reporting; incomplete, three not reporting unfilled orders.		

Rock and Slag Wool Manufacturers Want NRA Code

THE National Association of Rock and Slag Wool Industries, claiming to represent 95% of the manufacturers, submitted a proposed code of fair competition to NRA at a public hearing January 30. The proposed code provides for uniform cost accounting, publicity for prices, terms, etc., a merchandising plan, prohibits the usual unfair practices, including an unusual one—espionage of competitors; prohibits selling below cost "direct cost." Included in direct cost are (1) raw material cost; (2) direct labor cost; (3) "manufacturing burden (power, factory overhead, maintenance, technical control, factory warehousing, factory shipping costs)"; (4) 15% of the "total manufactured cost" for other overhead items.

Crushed Stone Association President Predicts Amalgamation of Three Aggregate Associations

Annual Meeting at Cincinnati, Ohio, Shows Code Is Bringing Industries Together Rapidly

SO MUCH time was required for discussion of the code of fair competition of the crushed stone, sand and gravel, and slag industries, at their joint convention at Cincinnati, Ohio, January 22-26, that the annual convention of the National Crushed Stone Association was rather perfunctory. Most interesting, and to many startling, was the address of Albert L. Worthen, retiring president of the association. Extracts from this follow:

Must Maintain Promotional Activities for Stone

"In each of my former annual addresses I have stressed the importance of the Bureau of Engineering, pointing out that it carried on the only promotional work of any consequence or real value that was being done for the crushed stone industry. I urged you to support the National Association for the reason that through it the industry was making the only real constructive effort to protect the present market and develop new markets for crushed stone. All of the arguments which I have presented in the past are just as vital today. Crushed stone as an aggregate has always been on the defensive. Competing materials in almost every instance are being offered as acceptable substitutes for crushed stone. If we are to protect our investment we should do everything possible to prevent a trend to lower specifications. Successful opposition to the use of substitute materials can only be waged by a reputable Bureau of Engineering which will present supporting facts gathered from actual service data and from proper laboratory investigations and tests. I cannot too forcibly express my conviction of the value of the Bureau of Engineering to every producer of crushed stone in the United States.

Tribute to Otho M. Graves

"I am thankful for this opportunity to express to Otho M. Graves the sincere gratitude and appreciation of every member of the association and of the entire crushed stone industry for the personal effort which he has so unselfishly made in the interest of the code, first, as chairman of the organization committee, and later as chairman of the Temporary Code Authority and Temporary Executive Committee of the Code Authority. Only the members of these committees have any conception of the vast amount of time Mr. Graves has devoted to this work. There have been literally volumes of correspondence which have required prompt attention and it has been necessary for him to attend innumerable conferences with members and boards of the National Recovery Administra-

tion in addition to the meetings with his own committee. It has been a personal sacrifice and one on the part of his company which places an obligation upon us which we can never repay.

* * *

For One Association

"My next remarks may fall upon unrecceptive ears; furthermore, some will find it difficult to credit them as my sincere and honest opinion. A year ago I would have opposed such an idea just as strongly as I will support it now.

"Last May, in my opinion, the National Crushed Stone Association, the National Sand and Gravel Association and the National Slag Association took the first definite steps toward the merging of those associations into a Mineral Aggregates Association. Was it not a truly remarkable undertaking when three so highly competitive industries representing millions of dollars of invested capital agreed to submit a single Code of Fair Competition to the President of the

United States? At first there was some suspicion and distrust lest one industry should seek an advantage over another, but as the work progressed a feeling of confidence and faith developed between the industries and this has strengthened continuously. I am now convinced that a merger of the present National Associations into a Mineral Aggregates Association is not only practical and logical but inevitable, regardless of the future of the National Recovery Administration. Such a step, if it could be taken now, would simplify the administration of the code which at present is a difficult and complicated problem because the Code Authority must carry on its work through the agency of three national associations.

Separate Promotional Activities

"I wish it thoroughly understood, however, that I do not advise a consolidation or merger of the respective Bureaus of Engineering. The promotional work of these organizations should continue as separate and distinct activities and each organization should be controlled and supported by its respective industry. It is not for me to outline a method of procedure to accomplish this recommendation but I prefer rather to warn you that the handwriting is on the wall and to urge your thoughtful and sympathetic consideration of such a step.

* * *

"I now believe we may look for an improvement in business for 1934, and it is reasonable to anticipate a coincident renewal of financial support from association members. Should this prove true it will make it possible for us to resume all former activities and undertake additional ones which we have in mind.

"During the year 1933, 11 member companies resigned their membership in the association and we accepted 63 new companies into membership. The net result was a gain of 52 member companies. The total active membership is now 175 companies."

Business Conditions and Prospects

A. T. Goldbeck, director of the Bureau of Engineering, presented a summary of business conditions and prospects for 1934, in full as follows:

"It has been customary to ask the members of our Board of Directors to make a statement of the business conditions in their respective territories during the past year and to indicate what might be expected in the immediate future. In an effort to conserve time your President has requested me to summarize such reports as have been presented by our directors and thus give you



Albert L. Worthen, retiring president of N. C. S. A.

a composite picture of what has been the status of our industry during 1933 and what may be its status during the present year, 1934.

"The following statement, therefore, is based to a very large extent upon the individual reports of the members of our board and it is supplemented by such information as I have been able to obtain from conversations with Government officials and from published statements of what is contemplated in the way of expenditures during the present year.

"Under our code we have already divided our industry into various producing regions and it will not be illogical to take these regions in order, as nearly as the reports which I have received will permit.

Region No. 1

"Region No. 1 involves Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island. One report from Massachusetts indicates that business was off about one-third, presumably as compared with 1932 and that prices also were off about the same amount. More tonnage is expected, however, in 1934. Another company, occupying parts of Vermont, New Hampshire, Maine and Massachusetts as well as Pennsylvania, New York and Delaware, operated at about 35% of its capacity in 1933 with a selling price slightly lower than in 1932. Its operating costs also were lower, resulting in a net profit of a very small amount for the year. These figures, however, apply to its entire operation and not only to that portion of it in Region No. 1. In 1934, higher prices are expected, but at the same time a 20% increase in payroll and an increase in cost of supplies becomes necessary. This producer points out the necessity for real coöperation among the district committees and producers in the various districts to the end that the selling price may be more than the cost of production. He is not as optimistic as his brother producer for he does not see any reason for an increased production in 1934. He also points out the fact that a large portion of the Federal money has not benefited commercial plants. One bright spot on the 1934 horizon seems to be effective code administration.

"In the Connecticut and Rhode Island portions of this region approximately the same tonnage was sold in 1933 as in 1932, but the prices were lower. There was little private construction and the ballast programs were small. In view of the fact that the highway projects let at the end of this year include a good tonnage of stone, the early part of 1934 should be much better than 1933. Furthermore, the open price plan as adopted under the code promises a better price for 1934 than in 1933.

Region No. 2

Region No. 2 involving the state of New York has its optimists as well as its pessimists. One producer in central eastern New York finds his production and price figures

both extremely low in 1933. He expects no better production for 1934, although he does expect better prices. In the metropolitan area of New York the picture for 1933 was extremely bad. The production was smaller than for many years and was about 25% of normal due to the collapse of building industry, the destruction of credit in the counties, the diversion of gasoline taxes by the state, inability to sell bonds or to finance public works in any other way. Federal money was about the only money available for construction. He feels, however, that 1934 will show a decided improvement due to a better credit situation and due, also, to the fact that a great deal of government money will be available for construction.

Region No. 3

"In Region No. 3, Pennsylvania, New Jersey and Delaware, one producer in southeastern Pennsylvania reports in a characteristically brief manner that 1933 was the worst in the last forty years and that there is no prospect of improvement for 1934.

"In western Pennsylvania one producer reports that 1933 was the most disastrous year in the crushed stone industry in that district. There was a rapid decline in flux stone during the first four months of 1933, but there has been an improvement since that time. Commercial stone shipments were low because of the construction of the Pinchot type of road in which almost any kind of a base is used other than commercial stone. The commercial material was used only for maintenance purposes. He estimates that the potential market for crushed stone was cut fully 60% due to the Pinchot type of road construction. For 1934 it shows promise of a better flux stone year and a better highway year also.

"Another producer in western Pennsylvania states that his flux stone averaged about 61% of his 1926 production and that his road stone production averaged 44% of this production in 1926. He believes that 1934 will show about 75% normal for both flux and road stone.

"In northern New Jersey the consumption was less than in 1932, indeed, perhaps 60% of the 1932 volume. The prices were greatly demoralized, but toward the latter part of the year, due to the efforts under the code, the price condition was improved. He is quite hopeful that 1934 will show a marked improvement over 1933.

Region No. 4

"Region No. 4 involves West Virginia, Virginia, Maryland and the District of Columbia. One producer, reporting from southern West Virginia, states that his production was about 50% of his 1932 production, the 1932 volume being about 70% of that in 1931. The prices were naturally also reduced. He states, however, that, happily, he finished in the black but that the purchase of one more bottle of black ink would have put him in the red. The ballast business in 1933 in West Virginia was the smallest in years and

the requirements of the C. & O. for 1934 are said to be only about 77% of those for 1933. He does not anticipate that the road projects now allocated will help very much in 1934.

A producer in Virginia reports 1933 to be about the leanest year he has ever experienced. Ballast was lower than in 1932 and prices were reduced by about 12½%. Commercial stone was reduced 28% and prices about 5%. In 1934 outlook for both ballast and commercial stone looks brighter due to the starting of Government work and the highway program seems larger than last year.

Region No. 5

A report from South Carolina indicates extreme pessimism, based on 1933 production being only from 20 to 25% of normal and practically all of it created by Government funds. No improvement seems to be expected.

Region No. 6

"From Region No. 6, including North Carolina, Kentucky and Tennessee, one report was received from eastern Tennessee stating that 1933 was the worst year yet experienced, but that there was a decided improvement during the last two months and with a continuation of CWA and PWA funds 1934 should be comparable with 1931 or even 1930. Thus far, no particular benefit has been received from the CWA. The public works program in that vicinity is just beginning to get into action and, therefore, this program should be of considerable assistance in 1934.

Region No. 7

Two of the Texas producers in Region No. 7 have reported, one of them gives the same story as from other parts of the country, namely, that 1933 was the worst in the history of his business. The railroads were in poor financial condition and therefore could not use stone for ballast. There was a considerable slowing down in building construction, very great increase in wayside competition, and, curiously enough, there was increased capacity of his fixed plant competition. Furthermore, there has been an increase in the use of materials other than stone for purposes in which stone was formerly given the preference. This, no doubt, is a reflection of the times when the effort is made to obtain as much mileage as possible with the expenditure of the least amount of money. Another producer in Texas says that price conditions during 1933 were the worst his territory has ever experienced and that sales were made below cost. This was the rule rather than the exception. However, under the code he looks for an improvement and expects to do a fair volume of business and earn a small profit during 1934.

Region No. 8

"One producer in Ohio states that in 1933 he had 50% of his normal production and that his selling price was slightly increased. In 1934 he expects from 75 to 80% of nor-

mal production and an increase in price should be brought about due to the operation of the code. He makes a pertinent comment with regard to CWA funds. These funds, he says, have taken care of poor relief which normally would be taken from the county funds and thus the inference is that indirectly the CWA funds have been of benefit for they have released county funds for construction which otherwise would be used for relief purposes.

Region No. 9

"Illinois and Indiana: A producer immediately outside of the Chicago area reports 1933 sales about equal to those in 1932 with prices slightly depressed. Sales were dependent on gasoline tax monies and other public funds. In 1934 he looks for somewhat brighter times due to PWA and CWA activities.

Region No. 10

"Michigan and Wisconsin: One report from Wisconsin in the vicinity of Milwaukee states that building permits in Milwaukee dropped from \$47,000,000 in 1929 down to \$3,000,000 in 1933. Sales dropped off 90% from the 1932 sales volume and this in spite of the fact that 1932 also was a poor year. He sees no great improvement in sight for 1934 because apartment, office buildings and factories are nowhere near fully occupied. In other words, extra buildings of this nature may not be required until full occupancy of the present facilities is had. This producer makes a significant remark with regard to private construction. He doesn't think any great improvement is to be expected in private construction until the value of the dollar is fixed. Loans of one hundred cent-dollars and repayments in fifty-cent-dollars are certainly not attractive to moneyed interests and until we can get a stabilized dollar we cannot expect private funds to be used to any great extent for construction purposes.

* * *

"No reports were received from Regions 11 to 16.

* * *

"There can be no doubt after hearing this summary, made up as it is of fragmentary and incomplete evidence, that the year 1933 will long be remembered in the crushed stone industry as the most disastrous year we have ever experienced. Had the National Industrial Recovery Act not been signed by the President, the industry would have been left without a single ray of hope for the present year, and disaster would have been quite complete.

Optimism Notwithstanding

"In spite of the cataclysm of 1933, there is a tone of optimism running through most of the reports when considering the prospects for 1934, and it seems to me that this optimism is entirely warranted. It will be recalled that, of the \$3,300,000,000 appropriated under the National Recovery Act, \$400,000,000 was set aside for highway construc-

tion. I am told, through inquiry at the Bureau of Public Roads, that of this \$400,000,000 there remain \$136,000,000 still unobligated and, furthermore, as of January 6, some 500 contracts had been completed totaling only some \$13,000,000, thus showing that the bulk of the \$400,000,000 will be spent in 1934 and that the industry can have received but very little benefit from this appropriation during 1933. This fact certainly warrants some optimism on the part of our producers.

"In the past we have had an annual Federal Aid appropriation for highways amounting to roughly \$75,000,000 to \$100,000,000 but thus far no new Federal Aid appropriation has been made and this is the first year in many years that such a state of affairs has existed. I understand that a new Federal Aid bill has been introduced, but I do not know what fate awaits it. There remains only about \$5,000,000 of Federal Aid money still unobligated.

Continuing Federal Public Works

"There is good reason to believe that there will be a continuing program of public works, financed by an annual appropriation of \$500,000,000. This is proposed by President Roosevelt to follow upon the present emergency program. Congress has been asked to appropriate the sum of \$2,000,000,000 to be made available commencing at the beginning of the new fiscal year, July 1, 1934, out of which the \$500,000,000 for public works will come. It has been stated that the President has a long range policy on Public works that is rapidly shaping up, the idea being to formulate a policy of national planning and, finally, put public works on a pay-as-you-go basis at a certain fixed rate per year. It is said that the President does not intend to interfere with the prerogative of Congress to earmark the \$2,000,000,000 fund for 1934 and 1935. It is expected, however, that there will be a distribution of this fund roughly as follows:

Public works	\$500,000,000
Relief during the winter of 1934	600,000,000
Civilian conservation corps.....	300,000,000
Reconstruction Finance Corp.....	500,000,000
Farm credit and home mortgaging	100,000,000

"This much seems certain; there will not be a sudden stoppage of Federal funds for public works construction, but, on the other hand, there seems to be developing a policy of continuing such Federal financing as long as it is necessary. Such a policy can only be helpful to our industry.

Price Stabilization

"Of definite benefit should be a stabilization of prices at figures which will permit of a legitimate profit under the operation of our code and certainly this is indeed a bright spot for 1934 and in all probability for some time in the future. Let us not attempt to get excessive profit, and thus work to our own disadvantage.

"Some Treasury Department calculations as to the general business construction index might be of interest; whereas this index

number for the current period is around 74, it is calculated that it will be around 85 for the year 1934. In some quarters it is regarded that February and March will see increased business due to governmental expenditures in civil and public works, but that later the first real test will come as to the effectiveness of the Government public works program.

"Of very great importance to the recovery of our business, and, in fact, of business as a whole, are two outstanding factors, namely, a continuance of the public works policy and, above all, the settling of our monetary policy, for upon this latter depends the release of capital for private building construction.

"Summing up the matter, then, 1933 was particularly disastrous so far as volume of production and prices were concerned. However, during the past year distinct and bright rays of hope were offered by the National Industrial Recovery Act and by the signing of our Code of Fair Competition.

"Let us look forward to the remainder of the year, 1934, with courage, for we should have a bigger volume of production coupled with better prices."

Election of Officers

Russell Rarey, vice-president, Marble Cliff Quarries Co., Columbus, Ohio, was elected president of the National Crushed Stone Association. The following regional vice-presidents were elected.

Arthur S. Lane, treasurer, John S. Lane & Son Co., Meriden, Conn.

A. B. Mack, vice-president, Kelley Island Lime and Transport Co., Cleveland, Ohio.

T. I. Weston, president, Weston & Brooker Co., Columbia, S. C.

E. Eikel, Servtex Materials Co., New Braunfels, Texas.

W. R. Sanborn, vice-president, Lehigh Stone Co., Kankakee, Ill.

Porter W. Yett, president, City Motor Trucking Co., Portland, Ore.

C. M. Doolittle, president, Canada Crushed Stone Co., Ltd., Hamilton, Ont.

A. J. Wilson, president, Granite Rock Co., Watsonville, Calif.

In addition to the foregoing officers the following were elected directors:

W. M. Andrews, Union Limestone Co., New Castle, Penn.

C. C. Beam, Melvin, Ohio.

W. P. Beinhorn, Trap Rock Co., St. Paul, Minn.

H. E. Billman, Rock Hill Quarry & Construction Co., St. Louis, Mo.

A. J. Blair, Lake Shore Stone Co., Milwaukee, Wis.

Anson S. Blake, Blake Bros. Co., San Francisco, Calif.

L. J. Boxley, Blue Ridge Stone Co., Roanoke, Va.

J. E. Cushing, Cushing Stone Co., Inc., Schenectady, N. Y.

Samuel F. Dixon, Orange Quarry Co., West Orange, N. J.

F. O. Earnshaw, Carbon Limestone Co., Youngstown, Ohio.

Otho M. Graves, General Crushed Stone Co., Easton, Penn.

F. T. Gucker, John T. Dyer Quarry Co., Norristown, Penn.

George Hammerschmidt, Elmhurst-Chicago Stone Co., Elmhurst, Ill.

J. L. Heimlich, LeRoy Lime & Crushed Stone Corp., Le Roy, New York.

W. E. Hilliard, New Haven Trap Rock Co., New Haven, Conn.

N. E. Kelb, Erie Stone Co., Indianapolis, Ind.

E. J. Krause, Columbia Quarry Co., St. Louis, Mo.

Thomas McCroskey, American Limestone Co., Knoxville, Tenn.

B. A. McKinney, West Roxbury Trap Rock Co., West Roxbury, Mass.

John Prince, Stewart Sand Co., Suite 804, City Bank Building, Kansas City, Mo.

John Rice, General Crushed Stone Co., Easton, Pa.

J. A. Rigg, Acme Limestone Co., Alderson, W. Va.

H. E. Rhodes, Franklin Limestone Co., 612 10th avenue, Nashville, Tenn.

James Savage, Buffalo Crushed Stone Co., Buffalo, N. Y.

F. W. Schmidt, Jr., North Jersey Quarry Co., Morristown, N. J.

J. F. Schroeder, Linwood Cement Co., Davenport, Iowa.

W. L. Sporborg, General Crushed Stone Co., Syracuse, N. Y.

John W. Stull, Liberty Limestone Corp., Rocky Point, Va.

Stirling Tomkins, New York Trap Rock Corp., New York City.

R. S. Wilson, Big Rock Stone & Material Co., Little Rock, Ark.

W. F. Wise, Southwest Stone Co., Dallas, Texas.

A. L. Worthen, The Connecticut Quarries, Box 1849, New Haven, Conn.

Representing Manufacturers' Division

A. Goldberg, Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

L. W. Shugg, General Electric Co., Schenectady, N. Y.

F. O. Wyse, Bucyrus-Erie Co., Milwaukee, Wis.

Honorary Member

Harold Williams, Boston, Mass.

Cement

Marquette Portland Cement Co., Chicago, Ill., announced January 15 a 20% increase in wages at its Oglesby, Ill., and Cape Girardeau, Mo., plants. About 1000 workers are benefited.

State of Michigan received an offer of \$35,000 from L. P. Jay, Detroit, Mich., for its cement plant at Chelsea. The bidder proposes to operate it to make cement.

Portland Cement Co. of Utah, Ashby Snow, president, has purchased the property of the Western Portland Cement Co., Baker, Utah, for \$120,000. The Western cement company plant has not operated since August, 1931. It was built in 1907 by Chapin A. Day and associates at a cost of between \$700,000 and \$800,000. It had a capacity of about 1200 bbl. per day. It was originally the Utah-Idaho Cement Co. What disposition Mr. Snow intends to make of the property is not known locally, but it is anticipated that the plant will be dismantled.

Sand and Gravel President Non-Committal on Merger

Annual Meeting at Cincinnati, Ohio, Confined to Business
of Association

FOLLOWING a day devoted to general registration and several meetings of the Code Authority for the crushed stone, sand and gravel and slag industries, members of the National Sand and Gravel Association convened for the first session of their eighteenth annual convention, January 23. At the same time independent sessions of the other two national associations were put underway.

Nearly 200 sand and gravel producers from 25 states registered at the convention and most of these were present at the opening session when President H. V. Owens and Secretary V. P. Ahearn started proceedings by giving their brief reports. The statement of the association treasurer, H. S. Davison, also was presented and accepted at this time. R. J. Potts, Waco, Texas, spoke briefly with reference to business prospects under the code and on the progress thus far made in organizing the Code Authority. Otho M. Graves, chairman of the Code Authority, appeared to deliver a five-minute informal talk on the same general subject.

Report on Research

Stanton Walker, director of the engineering and research division of the association, reported that activities along research lines had been curtailed because of the great amount of work which necessarily had to be done in connection with the code. He referred, however, to some work on specific gravity and moisture content. He submitted that the problem needing perhaps the greatest study was that involving bituminous mixtures and other low cost highway propositions such as cement bound macadam. Expressing hope that normal research and development activities could be resumed he mentioned many research developments that seem to call for checking on the part of the association. Representative of this group of problems he thought was the effect of the quality of aggregates on volume changes in concrete.

Must Maintain Identity

President Owens emphasized the need for coöperation among the three industries joined by the code but, referring to Mr. Walker's report, he warned that the association should see that the identity of its industry was maintained. He recommended that the competitive conditions of sand and gravel in connection with other aggregates should be protected by maintaining promotionally valuable research work.

Reference was made to the current development of portable plant operation in the

sand and gravel industry, and two portable operators, J. F. Bloomer, Appleton, Wis., and S. J. Reader, Minneapolis, Minn., were introduced to the convention as leading representatives of the portable branch of the industry.

Executive Secretary Ahearn spoke of the latest U. S. Bureau of Mines report that showed about 28% of the 1932 sand and gravel production was government-produced. H. H. Hughes of the Bureau of Mines, Washington, D. C., was present at the meeting and amplified the remarks of Secretary Ahearn on this subject.

CWA-PWA Discussed

The trend of Civil Works Administration and Public Works Administration activities was referred to by the secretary who also pointed out that state highway projects and convict labor production in some areas were developing without due regards to the right of the industries with which they interfered. In his opinion the federal government in 1934 will be receptive to some kind of restrictive regulation on the government production of aggregates. He said that both CWA and PWA projects as well as the Bureau of Public Roads work should all be geared, so far as aggregate production went, to the code.

Election of Officers

Harold V. Owens, president, Eastern Rock Products, Inc., Utica, N. Y., was re-elected president of the National Sand and Gravel Association. George W. Renwick, vice-president, Chicago Gravel Co., Chicago, Ill., was elected vice-president, succeeding J. C. Buckbee, president of the Northern Gravel Co., Barton, Wis., who would not accept renomination because of his outside activities. Harry S. Davison, secretary and treasurer, H. K. Davison & Co., Pittsburgh, Penn., was re-elected secretary and treasurer. In addition to the above officers the executive committee comprises: Paul P. Bird, president, Boston Sand and Gravel Co., Boston, Mass.; Alex Foster, Jr., Warner Co., Philadelphia, Penn.; Lee T. McCourt, vice-president, Central Sand and Gravel Co., Memphis, Tenn.; M. A. Neville, vice-president, Western Indiana Sand and Gravel Co., Lafayette, Ind.

Members-at-large of the board of directors elected at the convention are: M. A. Neville, J. C. Buckbee and Anderson Dana, secretary, Seaboard Sand and Gravel Co., New York City. The other directors are elected by their respective districts.

Rock Products News Briefs

Crushed Stone

Blackwater Stone Co., Columbia, Mo., has obtained a contract for 200,000 cu. yd. of stone to be used in the construction of the Fort Peck dam project on the Missouri River in Montana. The company will open a quarry near Saco, Mont. R. Newton McDowell, Kansas City, Mo., is president of the Blackwater Stone Co.

Frank Colon, Albion, N. Y., quarry operator, has been awarded damages of \$7,875 by the State Appellate Court for damages to his property between 1921 and 1932, because of seepage from the state barge canal. He sued for \$59,529.

Sand and Gravel

J. L. Shiely Co., St. Paul, Minn., has obtained a contract for furnishing sand and gravel aggregates for construction of the Fort Peck dam project in Montana. The company will erect a new plant near the site of the work, using a Sauerman drag scraper and hoist and Link-Belt conveying, screening and washing equipment. The plant will have a capacity of about 1,000 tons per day.

Construction Materials Co., Chicago, Ill., has gone into voluntary Federal receivership in order to effect a financial reorganization. A. D. Plamondon and Charles L. Reese were appointed receivers.

Santa Clara Sand and Gravel Co., Ventura, Calif., has agreed to lease its plants at Montalvo and Saticoy to the city of Ventura. The city proposes to operate the plants with CWA labor.

Ready-Mixed Concrete

Mixed Concrete Co., 560 Harmon Ave., Columbus, Ohio, has been organized by C. E. Haines, of the Permanent Concrete Products Co., W. E. Anderson and his son, Willis Anderson, of the Anderson Trucking Co. The ready mixed concrete operations of the Permanent Concrete Products Co. have been taken over by the new company.

Gypsum

United States Gypsum Co., Chicago, Ill., has been awarded a contract of \$104,200 for fireproofing in 17 U. S. Air Corps hangars at Randolph Field, Tex.

United States Gypsum Co., Chicago, Ill., has been sued for \$200,000 for alleged injuries to a New Brighton, Staten Island, New York, fireman; incurred in fighting a fire at the company's mill in New Brighton on August 21, 1931. It is contended by the plaintiff that the fire was caused by combustibles (excelsior), of which there was an allegedly illegal amount piled on the

loading platform and alongside the railroad tracks of the storage warehouse.

Lime

Cajon Lime and Chemical Co., Ltd., Cajon Pass, Calif., has taken over the rotary kiln lime plant of the Cajon Lime Products Co. It is proposed to develop the property to make dolomitic lime products and dry ice (CO₂). The plant was built several years ago by the late William H. Urschell of Woodville, Ohio, and has never operated for any considerable period. The manager of the Cajon Lime and Chemical Co., Ltd., is B. B. Bricker, who has been associated with the project, off and on, since the start.

Prices Bid—Contracts Let

Seattle, Wash.: Superior Portland Cement, Inc., low bidder on 14,400 bbl. of "Hyurly" quick-hardening cement for CWA work; price \$2.95 per bbl. Klinker Sand and Gravel Co. and Salmon Bay Sand and Gravel Co. each bid \$3.10 per bbl.

Los Angeles, Calif.: Blue Diamond Cement Co. awarded contract for 2400 bbl. of cement at \$2.55¼ per bbl. on Arroyo Seco flood control project.

Columbus, Ohio: Marble Cliff Quarries Co. and Scioto Lime Co. submitted the same bid, \$6.80 per ton, for 8000 tons of lime for city water-purification plant.

Milwaukee, Wis.: City Board of Purchases recently took bids on 1000 bbl. of cement from dealers. Seventeen firms bid to supply the cement, 15 of which were the same price, \$2.40 per bbl. One firm, the North Side Lumber and Fuel Co., submitted the low proposal at \$2.20 per bbl., and another, the Berthelet Pipe and Supply Co., the high bid of \$2.45. While interviewing the competing bidders, Joseph W. Nicholson, city purchasing agent, said he learned that the 15 reached an agreement on price quotations prior to submitting their bids. They contended that under the NRA code such price fixing is legitimate. Mr. Nicholson insisted that uniform prices by previous agreements are a violation of the anti-trust act and advised the bidders that the question would be put in the hands of the city attorney, Max Raskin.

Cement

Statistics of the portland cement industry compiled by the U. S. Bureau of Mines for December, 1933 show production 3,526,000 bbl., shipped 3,738,000 bbl., in stock at the end of the month 19,498,000 bbl. Production showed a decrease of 17% and shipments an increase of 31.9%, as compared with December, 1932. Portland cement stocks at mills were 3.7% lower than a year ago. The preliminary totals for 1933 show decreases of 17.4% in production and 20.7% in shipments from the final totals for 1932.

Estimated production in 1933 was 63,373,000 bbl., shipments 64,086,000 bbl.; compared with 76,741,000 and 80,843,000 respectively, in 1932. The decreases were general in all districts except the Southern States, which about held the same, in the Rocky Mountain States, which showed a slight increase in 1933, and in California, where about a 20% increase took place.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 163 plants at the close of December, 1933, and of 165 plants at the close of December, 1932.

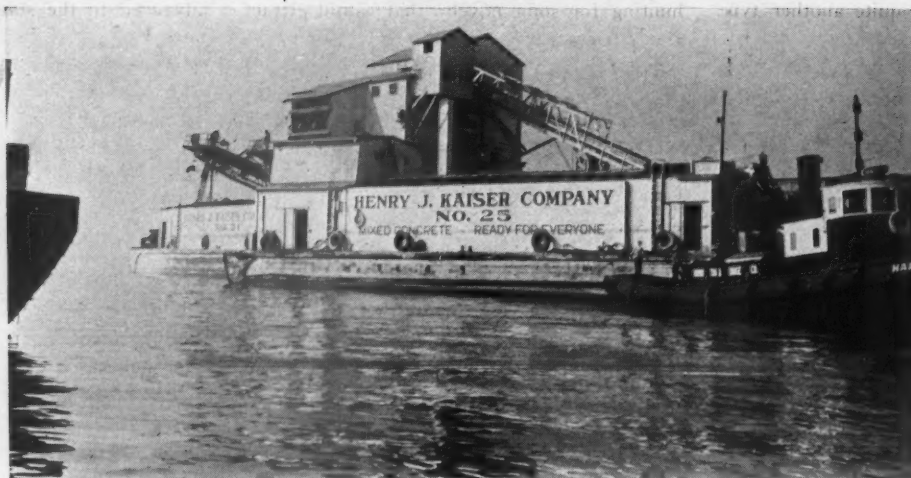
	Ratio (Percent) of Production to Capacity				
	December 1932	December 1933	Nov. 1933	Oct. 1933	Sept. 1933
The month ..	18.5	15.5	21.2	22.1	25.5
12 mos. ended	28.3	23.6	23.9	24.5	25.5

Universal-Atlas Cement Co., Chicago, Ill., has made application to the U. S. War Department for permission to construct a wharf and adjacent dolphins in the Mississippi River to serve its Hannibal, Mo., plant. The docks will be needed for loading shipments for the locks being constructed within the next year in the river for which hundreds of carloads of cement will be needed. They also will provide loading facilities for the future when the 9-ft. channel which the locks and dams are to provide, is completed and the Mississippi is used for large freight shipments. The application to the War Department for permission to construct the wharf states that the wharf will extend 150 ft. from the shore line at 3.9 ft. stage of the river.

California Water Authority, Sacramento, Calif., a state commission, is reported to be contemplating construction of a cement plant in the Gray Rocks district, near Redding, to furnish cement for the construction of the proposed Kennett dam.

Indian Dies With Rock Products Secret!

NEW YORK STATE newspapers carry an AP news item from Syracuse as follows: "A formula which would transform limestone waste into a useful building material was a secret to which death held the key. Albert Schanandoah, an Oneida Indian and an adviser to the Onondagas, with whom he lived, died in a hospital January 10 without revealing the formula which might have made him rich. He was refused a patent, and the Solvay Process Co., which throws away tons of the refuse, denied him a hearing because he would not reveal one of the ingredients. Two years ago he showed Cornell University scientists how he could turn the waste into material lighter but harder than brick. Previously chemists could not find a formula which would make the refuse hold together."



Batching plant and barges which carry two 3½-yd. mixers and 36 batches for the bay bridge

California Producers Share in Recovery Program

By Edmund Shaw,

Contributing Editor, Rock Products

THIS is written after a visit to the San Francisco Bay region to study the concrete work of the two big bridges that are being built there. In addition visits were made to several aggregate plants and the offices of some of the cement companies. No one I talked with had any complaint to make concerning the condition of the industry at this time. General construction still lags too far behind other work to make much business for the lime and gypsum producers, but the makers of concrete materials have little to complain of. The bridge jobs take about 4,000 cu. yd. of concrete per day and that will probably be increased by the time this is printed. With the new Federal relief, a good highway program and such construction as goes on in even the hardest times the prospects are not so bad for them.

To me the most interesting thing about the bridge jobs is that both of them are being built by aggregate producers, so far as the concrete work goes. The Henry J. Kaiser Co. has the contract for the concrete on the Bay Bridge and part of the aggregate comes from the big Kaiser plant at Radum, Calif. The remainder is supplied by a group of two quarry men and three sand and gravel operators, working under an arrangement of the sort that has supplanted cut-throat competition. Everything is harmonious and the job is going along beautifully except for occasional difficulties with fogs and winds, which have never yet succeeded in stopping the pouring, however.

The same might be said of the Golden Gate bridge job where the concrete contract was taken by Pacific Coast Aggregates, Inc. This company furnishes all the aggregates on the San Francisco side and on the Marin

side they are furnished by a group of producers in the same way that they are furnished for the Bay bridge. There will be about 1,600,000 cu. yd. of concrete in both bridges so the job will last a while even at an increased rate of pouring.

Sell Concrete Rather Than Aggregates

Both jobs are remarkable instances of the success of the modern way of selling aggregates, which is to make them into concrete. The details and the methods are reserved for a future article.

But if the aggregate producers are getting along harmoniously the same cannot be said to be true of the cement companies. Of course, all the larger cement manufacturers are making cements that are quite satisfactory for use in the bridge construction, and I think that all of them, either are furnishing cement to it or will be soon. But the public has heard a great deal about the two that have been most spoken of in connection with the famous "pink" cement controversy, which involved a lawsuit and the resignation of one of the bridge directors because he wished to avoid the appearance of using his office to sell his plant's product. I think the fact that he was connected with a newspaper was what caused the other papers to boil and seethe with indignation, the same sort of thing that so disturbed the Coast when someone thought of putting a cement mill near one of the future real estate prospects of Los Angeles. And for some reason, as yet unrevealed to this present writer, one has only to whisper "cement" in the ear of a California editorialist to see him fulminate. They have been doing it most of the time during the five years that I have lived here

with no visible result to the industry or to anything else that I can see.

Special Cements for Sea-Water Concrete

But back of all the newspaper information and misinformation and the carefully worded statements from well-known authorities there is something which is of real interest to the cement and the building industries. The two companies mentioned in connection with the lawsuit (which grew out of changes in the specifications) are the Pacific Portland Cement, Consolidated, and the Santa Cruz Portland Cement Co. Both make cements especially for use in sea water construction, or where they may be attacked by ground waters containing alkali. The former makes a cement high in iron, a type that has long been recognized as resistant to sea water and the like, which might have been more generally made if it had not been for the serious mechanical difficulties that this company has succeeded in overcoming. Its product has been thoroughly tested not only in the laboratory but by years of performance and by hanging blocks of concrete made of it along with blocks of standard portland cement concrete where every tide would cover and uncover them, showing that while the standard cement concrete was attacked, the special cement concrete was not injured in the least. And a good market has been built up for this product as the result of its performance.

The special cement of the Santa Cruz Portland Cement Co. is the "pink" cement about which so much has appeared in the newspapers. It also stands all the laboratory tests of sodium and magnesium sulphates and has a good record of performance in

sea water." But it is of quite another type than the iron sea water cement for it is high in silica instead of being high in iron. It is produced by grinding clinker with a siliceous puzzolonic materials, making a cement of a type which has been much used in sea water in Europe for many years past. The theory on which it is made is that if it is attacked by sea water or alkaline solutions the lime liberated will at once combine with the active silica present, often making the concrete stronger, as is shown in laboratory tests, and sealing all the pores against further entrance of solutions.

Which, if either, of these is the better for the purpose the present writer cannot say if he would, for after reading pages of tests and reports and talking with some of the men who have tested both products he is quite unable to form any opinion. If a choice had to be made it would seem to him that it should be made on altogether different grounds than those of efficiency. So far as the bridge jobs go, both are being used in large quantities and the tests to which they have been subjected tend to show that they will do what the makers claim that they will do.

As a matter of fact almost every cement company on the Pacific Coast makes at least one other cement than standard portland and some of them make two or three. Besides cements which are resistant to sea water and alkalis, there are the high early strength cements of several varieties, the special plastics, the oil well cements, the low-heat cements and at least one that advertises its tan color as its special virtue. Some of these undoubtedly reflect real advance in the chemistry of cement making, but it is equally certain that some others would never have been made had it not been for the slow sales that sent every manufacturer

hunting for some novelty that would attract new customers, something that is as true of cement as it is of jewelry. How many of them will last when competition becomes less keen is a question. A friend who probably handles more kinds of cement than any other man in California tells me that he thinks the industry will return to one and perhaps two standard portland cements, but that both will be superior in some respects, plasticity, for example, to the standard portlands of today. I hope he is right for it seems to me that it would be a great mistake if we were to return to the many cement specifications that a former generation had to meet. It is generally conceded that the standardizing of specifications was the most important stroke of policy ever given by the cement manufacturers of the world.

Los Angeles Situation Improving

Returning to Los Angeles one finds that the industry is in a less happy condition. The cement mills have had plenty to do and will have with orders for cement for Boulder dam and the great aqueduct that is to bring its waters to southern California. But the aggregates for these jobs are made on the ground. The one very large job that has used commercial aggregates in this part of the state is Pine Canyon dam, and that is so far along that its demand for aggregates has lessened. In fact, I was told by one who should know that the tonnage of aggregates sold here has rather decreased than increased in the last three months of 1933.

But there is a real hope of better sales in the near future. There are two large buildings in the heart of Los Angeles on which the work is well advanced and the ground is being cleared for others. Then there is a great deal of work in prospect,

advanced to the stage where it needs only financing, the drawings, specifications and estimates being made. The structural engineers are unusually busy on plans for making existing structures safe from another earthquake and planning for new safe buildings. As I heard one of them say recently, "The structural engineer is sitting on top of the world just now," and I am glad that he has come to be considered something more than a slide-rule pusher in an architect's office, as he was in the days of my youth. And the fact that he is busy is the best indication that the prospects are something more than visions.

Portable and semi-portable aggregate plants are increasing slowly and two or three large scale producers have asked me questions about them in the past two weeks. One of them, who has gone far beyond the thinking-about-it stage said he was having plans made by an engineer. He had been through the catalogs of stock plants of this type and did not find anything to suit him. He did not say so, but I fancy his criticism is the same as my own, regarding the few that I have examined, that they tend to be too portable and that the tendency is to make the parts too light.

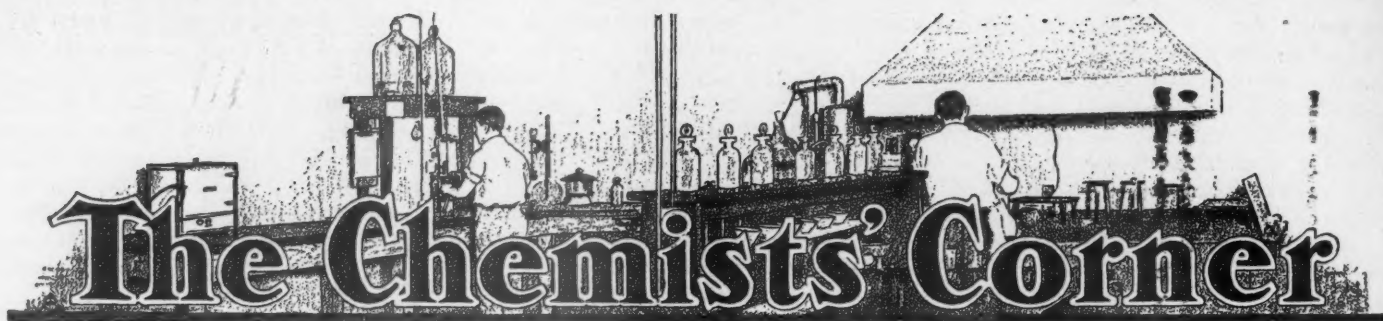
Portland Cement Yardage

AWARDS of concrete pavement for December and for the twelve months of 1933 are announced by the Portland Cement Association as follows:

	Sq. yd. awarded during December, 1933	Sq. yd. awarded to date, Dec. 30, 1933
Roads	4,107,468	37,137,736
Streets	1,723,139	7,719,696
Alleys	87,834	271,009
Total	5,918,441	45,128,441



Batching plant for transit mixer trucks on San Francisco side of Golden Gate bridge



Calculation of the Compounds in Portland Cement and Portland Cement Clinker

By S. G. McAnally,

Chief Chemist, Giant Portland Cement Co., Egypt, Penn.

Author's Note

THERE is more than the usual interest at the present time in the compound composition of portland cement. New specifications, adopted or proposed by large users of cement, limit the percentage of certain compounds. Investigations relative to the effect of the different compounds on the quality of concrete are being pursued. These matters involve the whole industry. Some cement chemists, who until now have never given thought to the calculation of the compound composition of cement, are now obliged to compute the compounds.

In my contacts with several cement chemists in the eastern states I have had the opportunity to discuss the matter with them. I believe they would welcome a simple method of calculating the compounds: a method which would be free from complications and possible sources of error, and be rapid.

I developed such a method some time ago and used it to advantage when I had to calculate the compound composition of over one hundred different samples of cement. I gave the method to other chemists who sought my assistance in the matter and who had similar tasks; they appreciated its value. I hesitate to draw any comparisons between my method and other known ones, yet it is simpler and possibly quicker; and it is accurate.

THE AUTHOR.

THE FOLLOWING methods, in conjunction with the appended conversion tables, will enable anyone, who has a knowledge of simple addition and subtraction, to calculate the compounds in cement or clinker in a few minutes' time.

One method is applicable to normal or low iron cements containing tri-calcium aluminate; the other method applies to high iron

cements containing no tri-calcium aluminate.

The class to which a cement belongs is found by referring to Table I. This table gives the "Fe₂O₃ equivalent" of the percentage Al₂O₃ in the cement or clinker. If the "Fe₂O₃ equivalent" is more than the percent-

age Fe₂O₃ in the cement, the latter belongs to the low iron class; if the "Fe₂O₃ equivalent" is less than the Fe₂O₃ in the cement, the cement belongs to the high iron class.

The method for low iron cements is based on the following formulae:

- (1) % C — % free C + % SO₃ — % CaSO₄ + % S +
% F + % A = % silicates and aluminates
- (2) % F × 1.344 + % A × 2.65 = % aluminates (C3A and C4AF)
- (3) (1) minus (2) = % silicates (C3S and C2S)
- (4) % S × 2.87 = % maximum di-silicate
- (5) (3) minus (4) = % available lime (for C3S)
- (6) Available lime × 4.07 = % C3S
- (7) (3) minus (6) = % C2S
- (8) % F × 3.04 = % C4AF
- (9) (2) minus (8) = % C3A

Abbreviations and terms:

C = CaO
S = SiO₂
F = Fe₂O₃
A = Al₂O₃

C3S = 3CaO.SiO₂
C2S = 2CaO.SiO₂
C4AF = 4CaO.Al₂O₃.Fe₂O₃
C3A = 3CaO.Al₂O₃
C2F = 2CaO.Fe₂O₃

Silicates = total C3S and C2S
Aluminates = total C3A and C4AF
Ferrites = total C2F and C4AF
Free C = free CaO

EXAMPLE:

The application of the method and the use of the tables is illustrated by using as an example a cement of the following oxide analysis:

Per cent	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	SO ₃	Ignition Loss	Free CaO
	20.9	3.1	6.6	62.4	3.5	1.6	1.5	Not determined

Referring to Table I, 6.6% Al₂O₃ is equivalent to 10.3% Fe₂O₃ or more than the percentage Fe₂O₃ in the cement; therefore, the cement belongs to the low iron class for which use Tables II, IIIa and IIIb, IV, V and VI.

CALCULATION:

Table II. 1.6% SO₃ × 1.7 = 2.7

Per cent	62.4	= CaO in cement
subtract	2.7	free CaO
diff.	62.4	= Combined CaO
add	1.6	SO ₃
sum	64.0	= Compound CaO and CaSO ₄
subtract	2.7	CaSO ₄
diff.	61.3	= Compound CaO
add	20.9	SiO ₂
add	3.1	Fe ₂ O ₃
add	6.6	Al ₂ O ₃
sum	91.9	= Silicates and Aluminates (1)

Table IIIa. $3.1\% F \times 1.344 = 4.2$ Table IIIb. $6.6\% A \times 2.65 = 17.5$

subtract 21.7 Aluminates

(2)

diff. 70.2 = Silicates

(3)

subtract 60.0 Maximum Di-Silicate

(4)

diff. 10.2 = Available Lime

(5)

Table VI. Avail. Lime $\times 4.07 = 10.2 \times 4.07 = 41.5\%$ 3CaO.SiO₂

(6)

Silicates — 3CaO.SiO₂ = 70.2 — 41.5 = 28.7% 2CaO.SiO₂

(7)

Table IV. $3.1\% F \times 3.04 = 9.4\%$ 4CaO.Al₂O₃.Fe₂O₃

(8)

Aluminates — 4CaO.Al₂O₃.Fe₂O₃ = 21.7 — 9.4 = 12.3% 3CaO.Al₂O₃

(9)

If the calculated 3CaO.SiO₂ (6) exceeds the Silicates (3), the cement contains free CaO and no 2CaO.SiO₂; in which case the % SiO₂ $\times 3.80 = 3\text{CaO.SiO}_2$ (Table VII) and, Silicates (3) — 3CaO.SiO₂ (Table VII) = Free CaO.

The method for high iron cements is based on the following formulae:

- (1) $\% C - \% \text{Free C} + \% \text{SO}_3 - \% \text{CaSO}_4 + \% S + \% F + \% A = \% \text{Silicates and Ferrites}$
- (2) $\% F \times 1.7 + \% A \times 2.1 = \% \text{Ferrites (C4AF and C2F)}$
- (3) (1) minus (2) = % Silicates (C3S and C2S)
- (4) $\% S \times 2.87 = \% \text{Maximum Di-Silicate}$
- (5) (3) minus (4) = % Available Lime (for C3S)
- (6) Available Lime $\times 4.07 = \% \text{C3S}$
- (7) (3) minus (6) = % C2S
- (8) $\% A \times 4.767 = \% \text{C4AF}$
- (9) (2) minus (8) = % C2F

EXAMPLE 2:

Analysis of cement:

	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	CaO	MgO	SO ₃	Ignition Loss	Free CaO
Per cent	19.8	7.6	4.0	64.9	1.0	1.6	0.9	Not determined

Referring to Table I, 4.0% Al₂O₃ is equivalent to 6.3% Fe₂O₃ or less than the Fe₂O₃ in the cement. The cement, therefore, belongs to the high iron class for which use Tables II, V, VI, VIIa and b, and IX.

CALCULATION:

Table II. $1.6\% \text{SO}_3 \times 1.7 = 2.7$

Per cent		
64.9	= CaO in cement	
subtract	free CaO	
diff. 64.9	= Combined CaO	
add 1.6	SO ₃	
sum 66.5	= Compound CaO and CaSO ₄	
subtract 2.7	CaSO ₄	
diff. 63.8	= Compound CaO	
add 19.8	SiO ₂	
add 7.6	Fe ₂ O ₃	
add 4.0	Al ₂ O ₃	
sum 95.2	= Silicates and Ferrites	(1)
subtract 21.3	Ferrites	(2)
diff. 73.9	= Silicates	(3)
subtract 56.8	Maximum Di-Silicate	(4)
diff. 17.1	= Available Lime	(5)
		(6)
		(7)
		(8)
		(9)

Table VIIIa. $7.6\% F \times 1.7 = 12.9$ Table VIIIb. $4.0\% A \times 2.1 = 8.4$

} = 21.3

Table V. $19.8\% S \times 2.87 = 56.8$ Table VI. Avail. Lime $\times 4.07 = 17.1 \times 4.07 = 69.6\%$ 3CaO.SiO₂Silicates — 3CaO.SiO₂ = 73.9 — 69.6 = 4.3% 2CaO.SiO₂Table IX. $4.0\% A \times 4.767 = 19.1\%$ 4CaO.Al₂O₃.Fe₂O₃Ferrites — 4CaO.Al₂O₃.Fe₂O₃ = 21.3 — 19.1 = 2.2% 2CaO.Fe₂O₃

If the calculated 3CaO.SiO₂ (6) exceeds the Silicates (3), the cement contains free CaO and no 2CaO.SiO₂, and the correct percentage of 3CaO.SiO₂ is re-calculated as follows, using Table VII:

Table VII. % SiO₂ $\times 3.80$ equals % 3CaO.SiO₂ and % Silicates (3) minus % 3CaO.SiO₂ (Table VII) equals free CaO.

When the compound composition of the cement is desired on the "clinker basis" also, it is only necessary to calculate the compounds on the "cement basis" and use the following formula to calculate the compounds on the "clinker basis":

$$\text{Formula: } \frac{\% \text{Compound (cement basis)} \times 100}{100 - \% \text{CaSO}_4 - \text{Ignition loss}} = \% \text{Compound (clinker basis)}$$

Example: The cement mentioned in the foregoing formula contains 69.3% 3CaO.SiO₂; 2.7% CaSO₄; 0.9% Ignition loss.

$$\frac{69.6 \times 100}{100 - 2.7 - 0.9} = \frac{6960.0}{96.4} = 72.2\%$$

3CaO.SiO₂ (clinker basis).

Key to Method

The key to the simplicity of the above methods of calculating the compound composition is formula (2) which is obtained by combining the usual formulae for calculating, separately, (A), 3CaO.Al₂O₃ and 4CaO.Al₂O₃.Fe₂O₃ in low iron cements, and (B), 4CaO.Al₂O₃.Fe₂O₃ and 2CaO.Fe₂O₃ in high iron cements. These formulae are as follows:

(A)

$$(1) (\% \text{Al}_2\text{O}_3 - \% \text{Fe}_2\text{O}_3 \times 0.64) 2.65 = \% 3\text{CaO.Al}_2\text{O}_3$$

$$(2) \% \text{Fe}_2\text{O}_3 \times 3.04 = \% 4\text{CaO.Al}_2\text{O}_3.\text{Fe}_2\text{O}_3$$

$$\text{adding (1) and (2) } \% \text{Fe}_2\text{O}_3 \times 1.344 + \% \text{Al}_2\text{O}_3 \times 2.65 = \text{Aluminates (abbr.)}$$

(B)

$$(1) (\% \text{Fe}_2\text{O}_3 - \% \text{Al}_2\text{O}_3 \times 1.57) 1.70 = \% 2\text{CaO.Fe}_2\text{O}_3$$

$$(2) \% \text{Al}_2\text{O}_3 \times 4.767 = \% 4\text{CaO.Al}_2\text{O}_3.\text{Fe}_2\text{O}_3$$

$$\text{adding (1) and (2) } \% \text{Fe}_2\text{O}_3 \times 1.70 + \% \text{Al}_2\text{O}_3 \times 2.10 = \text{Ferrites (abbr.)}$$

The use of Table VII for re-calculating the percentage 3CaO.SiO₂ applies only when the free CaO has not been determined.

Limitation of Calculations When the Determination of Free Lime Is Omitted

When the determination of the free lime is omitted, any method of calculating the compound composition will give only the potential composition (unless the cement or clinker contains neither free lime nor insoluble) which in view of some of the newly adopted, or proposed, specifications submitted by some of the large users of cement, is perhaps more important to the manufacturer.

TABLE I.—AL₂O₃ EQUIVALENT IN Fe₂O₃ (Factor: 1.566)

% Al ₂ O ₃	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% Al ₂ O ₃
2.0	3.1	3.3	3.4	3.6	3.8	3.9	4.1	4.2	4.4	4.5	2.0
3.0	4.7	4.9	5.0	5.2	5.3	5.5	5.6	5.8	6.0	6.1	3.0
4.0	6.3	6.4	6.6	6.7	6.9	7.0	7.2	7.4	7.5	7.7	4.0
5.0	7.8	8.0	8.1	8.3	8.5	8.6	8.8	8.9	9.1	9.2	5.0
6.0	9.4	9.6	9.7	9.9	10.0	10.2	10.3	10.5	10.6	10.8	6.0
7.0	11.0	11.1	11.3	11.4	11.6	11.7	11.9	12.1	12.2	12.4	7.0

TABLE II.—SO₃ TO CaSO₄ (Factor: 1.7)

% SO ₃	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% SO ₃
1.0	1.7	1.9	2.0	2.2	2.4	2.6	2.7	2.9	3.1	3.2	1.0
2.0	3.4	3.6	3.7	3.9	4.1	4.3	4.4	4.6	4.8	4.9	2.0

(Balance of tabular matter on following page.)

TABLES IIIa AND IIIb.—ALUMINATES (C3A AND C4AF) = 1.344 Fe₂O₃ PLUS 2.65 Al₂O₃

TABLE IIIa (Fe ₂ O ₃ × 1.344)											
% Fe ₂ O ₃	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% Fe ₂ O ₃
1.0	1.3	1.5	1.6	1.8	1.9	2.0	2.2	2.3	2.4	2.6	1.0
2.0	2.7	2.8	3.0	3.1	3.2	3.4	3.5	3.6	3.8	3.9	2.0
3.0	4.0	4.2	4.3	4.4	4.6	4.7	4.8	5.0	5.1	5.2	3.0
4.0	5.4	5.5	5.6	5.8	5.9	6.1	6.2	6.3	6.5	6.6	4.0
5.0	6.7	6.9	7.0	7.1	7.3	7.4	7.5	7.7	7.8	7.9	5.0

TABLE IIIb. (Al ₂ O ₃ × 2.65)											
% Al ₂ O ₃	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% Al ₂ O ₃
4.0	10.6	10.9	11.1	11.4	11.7	11.9	12.2	12.5	12.7	13.0	4.0
5.0	13.3	13.5	13.8	14.0	14.3	14.6	14.8	15.1	15.4	15.6	5.0
6.0	15.9	16.2	16.4	16.7	17.0	17.2	17.5	17.8	18.0	18.3	6.0
7.0	18.6	18.8	19.1	19.4	19.6	19.9	20.1	20.4	20.7	20.9	7.0
8.0	21.2	21.5	21.7	22.0	22.3	22.5	22.8	23.1	23.3	23.6	8.0

TABLE IV.—Fe ₂ O ₃ TO C4AF (Factor: 3.04)											
% Fe ₂ O ₃	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% Fe ₂ O ₃
1.0	3.0	3.3	3.7	4.0	4.3	4.6	4.9	5.2	5.5	5.8	1.0
2.0	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	2.0
3.0	9.1	9.4	9.7	10.0	10.3	10.6	10.9	11.3	11.6	11.9	3.0
4.0	12.2	12.5	12.8	13.1	13.4	13.7	14.0	14.3	14.6	14.9	4.0
5.0	15.2	15.5	15.8	16.1	16.4	16.7	17.0	17.3	17.6	17.9	5.0

TABLE V.—SiO ₂ TO MAXIMUM DI-SILICATE (Factor: 2.87)											
% SiO ₂	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% SiO ₂
17.0	48.8	49.1	49.4	49.7	49.9	50.2	50.5	50.8	51.1	51.4	17.0
18.0	51.7	51.9	52.2	52.5	52.8	53.1	53.4	53.7	54.0	54.2	18.0
19.0	54.5	54.8	55.1	55.4	55.7	56.0	56.3	56.5	56.8	57.1	19.0
20.0	57.4	57.7	58.0	58.3	58.6	58.8	59.1	59.4	59.7	60.0	20.0
21.0	60.3	60.6	60.8	61.1	61.4	61.7	62.0	62.3	62.6	62.9	21.0
22.0	63.1	63.4	63.7	64.0	64.3	64.6	64.9	65.2	65.4	65.7	22.0
23.0	66.0	66.3	66.6	66.9	67.2	67.4	67.7	68.0	68.3	68.6	23.0
24.0	68.9	69.2	69.5	69.7	70.0	70.3	70.6	70.9	71.2	71.5	24.0

TABLE VI.—AVAILABLE LIME TO TRI-CALCIUM SILICATE (Factor: 4.07)											
% Av. Lime	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% Av. Lime
5.0	20.4	20.8	21.2	21.6	22.0	22.4	22.8	23.2	23.6	24.0	5.0
6.0	24.4	24.8	25.2	25.6	26.0	26.5	26.9	27.3	27.7	28.1	6.0
7.0	28.5	28.9	29.3	29.7	30.1	30.5	30.9	31.3	31.7	32.2	7.0
8.0	32.6	33.0	33.4	33.8	34.2	34.6	35.0	35.4	35.8	36.2	8.0
9.0	36.6	37.0	37.4	37.9	38.3	38.7	39.1	39.5	39.9	40.3	9.0
10.0	40.7	41.1	41.5	41.9	42.3	42.7	43.1	43.5	44.0	44.4	10.0
11.0	44.8	45.2	45.6	46.0	46.4	46.8	47.2	47.6	48.0	48.4	11.0
12.0	48.8	49.2	49.7	50.1	50.5	50.9	51.3	51.7	52.1	52.5	12.0
13.0	52.9	53.3	53.7	54.1	54.5	54.9	55.4	55.8	56.2	56.6	13.0
14.0	57.0	57.4	57.8	58.2	58.6	59.0	59.4	59.8	60.2	60.6	14.0
15.0	61.1	61.5	61.9	62.3	62.7	63.1	63.5	63.9	64.3	64.7	15.0
16.0	65.1	65.5	65.9	66.3	66.7	67.2	67.6	68.0	68.4	68.8	16.0
17.0	69.2	69.6	70.0	70.4	70.8	71.2	71.6	72.0	72.4	72.9	17.0

TABLE VII.—SiO ₂ TO TRI-CALCIUM SILICATE (Factor: 3.80)											
% SiO ₂	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% SiO ₂
17.0	64.6	65.0	65.4	65.7	66.1	66.5	66.9	67.3	67.6	68.0	17.0
18.0	68.4	68.8	69.2	69.5	69.9	70.3	70.7	71.1	71.4	71.8	18.0
19.0	72.2	72.6	73.0	73.3	73.7	74.1	74.5	74.9	75.2	75.6	19.0

Additional Tables for High Iron Cements

TABLES VIIIa AND VIIIb.—FERRITES (C2F and C4AF) = 1.7 Fe₂O₃ PLUS 2.1 Al₂O₃

TABLE VIIIa (Fe ₂ O ₃ × 1.7)											
% Fe ₂ O ₃	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% Fe ₂ O ₃
3.0	5.1	5.3	5.4	5.6	5.8	6.0	6.1	6.3	6.5	6.6	3.0
4.0	6.8	7.0	7.1	7.3	7.5	7.7	7.8	8.0	8.2	8.3	4.0
5.0	8.5	8.7	8.8	9.0	9.2	9.4	9.5	9.7	9.9	10.0	5.0
6.0	10.2	10.4	10.5	10.7	10.9	11.1	11.2	11.4	11.6	11.7	6.0
7.0	11.9	12.1	12.2	12.4	12.6	12.8	12.9	13.1	13.3	13.4	7.0

TABLE VIIIb (Al ₂ O ₃ × 2.1)											
% Al ₂ O ₃	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% Al ₂ O ₃
2.0	4.2	4.4	4.6	4.8	5.0	5.3	5.5	5.7	5.9	6.1	2.0
3.0	6.3	6.5	6.7	6.9	7.1	7.4	7.6	7.8	8.0	8.2	3.0
4.0	8.4	8.6	8.8	9.0	9.2	9.5	9.7	9.9	10.1	10.3	4.0
5.0	10.5	10.7	10.9	11.1	11.3	11.6	11.8	12.0	12.2	12.4	5.0

TABLE IX.—Al ₂ O ₃ TO C4AF (Factor: 4.767)											
% Al ₂ O ₃	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	% Al ₂ O ₃
2.0	9.5	10.0	10.5	11.0	11.4	11.9	12.4	12.9	13.3	13.8	2.0
3.0	14.3	14.8	15.3	15.7	16.2	16.7	17.2	17.6	18.1	18.6	3.0
4.0	19.1	19.5	20.0	20.5	21.0	21.5	21.9	22.4	22.9	23.4	4.0
5.0	23.8	24.3	24.8	25.3	25.7	26.2	26.7	27.2	27.6	28.1	5.0

Determining Particle Size of Hydrated Lime

PARTICLE-size measurements of finely divided materials have recently been given much consideration by manufacturers and users of such products as hydrated lime, portland cement, paint pigments, fillers, etc. Some methods of determining particle size depend upon the microscope either to make all the measurements or to calibrate another method. In order to attempt to calibrate a sedimentation apparatus proposed for use in measuring the particle size of hydrated limes, some glass spherules were prepared because their shape made microscopic measurements more reliable. These spherules were separated into fractions having a range of a few microns.

In making microscopic measurements of such materials it is necessary to cover the particles with a liquid. Measurements on glass spherules, ranging in size from about 2 to 10 microns, showed that the apparent diameter changed with change in index of refraction of the mounting medium. Thus, a filar micrometer eyepiece indicated a certain spherule had a diameter of 3.8 microns when measured in a liquid having a refractive index of 1.68 but had a diameter of 4.5 microns when immersed in a liquid having a refractive index of 1.33. Because of the effect produced by the mounting medium the true particle size could not be determined with the microscope, but there did exist a fair correlation between the sedimentation method and certain of the microscopic measurements.

Cement Abstract

Free Lime in Portland Cement. G. E. Bessey of the Building Research Station differentiates very carefully between total free lime, which includes the lime that has been hydrated, from the actual CaO. It is obviously the latter from which danger of unsoundness arises. The determination is carried out by heating a fresh cement at 350 deg. C. for 30 minutes and then again at 550 deg. The accuracy of this method is about 0.5% CaO. The cause of free lime is believed to be due to some degree of underburning in most cases. That due to the decomposition of tricalcium silicate during cooling is regarded as negligible. Of the free lime left in the clinker a considerable portion is hydrated during grinding and storage, especially when gypsum is added before grinding. Water from spraying or exposure of the clinker would aid in hydration also. If a cement is unsound, due to the slow hydration of free lime in the larger particles, they are more unsound than the flour, in which part of the free lime has had a better chance to hydrate. On the other hand with a cement inherently sound, little difference could be detected between the grit and the flour. *Cement and Cement Manufacture* (1933) 6, No. 9, p. 297.

Editorial Comments

National Recovery Administrator Johnson has said that 90% of the complaints about industry operation under NIRA codes of fair competition come from small business men. This percentage is really not spectacular, nor anything to cause condemnation or ridicule of the small business operator. There are certainly at least nine times as many small

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businesses as there are large ones. One would guess that there are at least 100 times as many. If only 10% of the total fault finding is on the part of big business, that is a much larger percentage of big business than 90% of the total is of small business.

Apparently, the chief concern of the small operator is that he can not sell his product in competition with that of his big competitor at the same price as his big competitor. He recognizes that superior salesmanship, or the ability to use high pressure methods, are usually on the side of the big operator. Superior quality of product is often claimed by the large producer, but there is no reason why the small producer of rock products, at least, can not make just as high a quality—although he may not be able to *advertise* quality as extensively or as effectively. The same applies to "superior service," except that the large producer often really is equipped to render superior service and delivery.

The experience of AAA in trying to enforce a minimum price for milk in the Chicago metropolitan area, of the NRA in attempting to enforce minimum prices in the cleaning and dyeing industry are well known, and it proves how utterly impossible it is to enforce on small operators an undesired price level. It is doubtful if any court of justice would refuse the consumer the lowest price possible, provided that producer's business was able to exist on that price, assuming the same terms in respect to hours of labor and rates of wages as his competitors.

The contention of the small operator always is that because he has little or no overhead, because he has personal supervision of production and sales, he can afford to make a lower sales price than his large competitor. In hard times the small producer usually does get a larger percentage of the available business than his big competitors because he "is quicker on his feet"; and because his costs usually are actually less. As volume of business increases the tide often turns, and the large operators' costs go down rapidly because of increased volume. He is then in a position to undersell the small operator, and in times past he usually has taken advantage of this.

Obviously, there must be fair play, give and take. The small operators are too numerous and too vocal to be crowded out. They will always find popular support if they raise the cry of oppression. In such local industries as rock products production, with very limited areas of distribution, they have no fundamental economic disadvantage. In fact, if the present economic trend in industry continues, almost all industry will be more diffused over the country, in

smaller units, although there may be a continued trend to merge into larger management, selling and distributing organizations.

The opportunity of several small producers in a district to merge their selling into one organization has hardly been explored, and it would seem that this method could be made to answer the small producers' problem of getting his product on the market without recourse to price-cutting. A central selling agency for a group of strategically located small operations would have just as good, or better, an opportunity to sell service and quality as the large producer with a less elastic set-up. Most small producers are better operating men than salesmen, anyhow.

Looking at the future in a large way it would seem the prospects of the small operator are actually brighter than those of the big one. The New Dealers seem bent on hedging the big corporations in every way, by supervising security issues, by setting limits to executive salaries, by preventing accumulations of surplus, by restrictions on every hand. Such Federal restrictions are much more easily enforced against large corporations than small ones, or individual enterprisers. It is doubtful if such control as the Federal Government may readily exercise over large corporations ever can filter down to the numerous small ones. The effect of such curbs on the salaries and initiative of executives of large corporations may very conceivably drive the ambitious ones into small businesses of their own, on a scale hitherto unknown.

It is quite possible that some such thoughts and considerations as these are at the bottom of the NRA's apparent antagonism toward small business generally. Like the farmer, the small business man is the Nation's chief bulwark against communism, or state capitalism. There is no excuse for his being a chiseler or price-cutter and undermining the whole structure of his industry. Nor is there any excuse for a desire to eliminate him from the picture. The day is likely to come when big business will be fed up on government restrictions of one kind and another, and then big business will be glad enough to avail itself of the support of little business in freeing all business of unnecessary shackles.

What those unnecessary shackles are, or are going to be, no one knows at this time; but it is a safe bet that once government has started to restrict and control business, as it now has, it will go just as far toward too much control and restriction as unfettered private management went toward too much "rugged individualism." Therefore, it is to be hoped that both big and little business will have mutual respect and consideration for each other, and recognize that their common goal is pretty much the same—to preserve as much of our American traditions and practice of individual initiative and freedom of opportunity as is possible in such a complicated industrial structure as we have built up in the last 50 years.

Gypsum Industry's Code Under Way

Tonnage Vote Asked at Public Hearing

ALTHOUGH the gypsum industry was among the first to begin preliminary negotiations for a code of fair competition under the National Industrial Recovery Act, proceedings were delayed frequently for various causes. By January 9, 1934, when the public hearing finally was held, codes for the other important rock products—aggregates, cement, and lime—had been signed by President Roosevelt and already were in effect. With these codes establishing precedents on controversial issues it seems reasonable to expect that the final-code for the gypsum industry will be completed in short order.

Preliminary discussions with NRA apparently were successful in removing obstacles in the way of a complete agreement among gypsum producers, for little evidence of a controversial nature was introduced at the public hearing. The session was held Tuesday morning, January 9, at the Powhatan Hotel in Washington, D. C. Assistant Deputy Administrator John T. Lynch presided. The Industry Advisory Board of NRA was represented by Cornelius Rumely, the Labor Advisory Board by Fred W. Sutor and John L. Goshie, the Legal Division by Lawrence A. Knapp, and the Division of Economic Research and Planning by Spencer Reed. No representative of the Consumers' Advisory Board was present.

Gypsum Statistics

L. I. Neale of the Atlantic Gypsum Company and chairman of the Code Committee presented the proposed code of fair competition for the gypsum industry. Actual reading of the code was dispensed with, because it was available in printed form, but Mr. Neale prefaced his introduction with some interesting data. He stated that he had authority to speak for a group of companies in the gypsum industry as well as for the Gypsum Association.

Of the total 78 companies accounted for Mr. Neale said that 26 concerns representing 90% of production were members of the association and that 27 additional companies representing 5% of production consented to the provisions of the code as presented. Any changes, however, would have to be submitted to the individual companies for approval.

Of the 78 companies under consideration, according to Mr. Neale, 70 manufactured products used in some form of construction, 39 produced gypsum rock, 30 were calciners, 14 made wall board, 21 manufactured gypsum block, 43 operated mixing plants to make plaster, and 25 produced agricultural gypsum. Of course, the output of some of the companies included all these products, and many produced two or more. Gypsum

products normally are distributed through building supply dealers.

On January 1, 1933, capital invested in the gypsum industry amounted to \$84,517,764. The average daily capacity of its mining and quarrying facilities was 56,525 short tons, and the daily-capacity of its calcining equipment amounted to 28,964 short tons. The marked decline in construction has been reflected, of course, in a recession in demand for gypsum products. Whereas in 1929 the output of the industry was about 4,500,000 short tons, for 6 months of 1933 production amounted to only 582,000 short tons, indicating that the production for the year would total only about 1,160,000 short tons. Obviously, the number of wage earners has decreased considerably from 1929 to the present.

Articles I and II were passed without comment. They deal with the purpose of the code and definitions of terms used in the code.

Labor provisions—The labor and wage provisions outlined in Article III are worthy of repetition here because, although the A. F. of L. recommended minor changes, this article probably will remain virtually unchanged in the final code.

ARTICLE III—LABOR

Section 1, Hours.—No mine, quarry, mill or warehouse employee or other employee not covered below, shall be permitted to work in excess of forty (40) hours in any week except that during peak production periods and emergencies, any such employee may be permitted to work in excess of such hours but not to exceed forty-eight (48) hours in any week; provided, however, that the hours of labor for any such employee shall not average more than forty (40) hours per week during each six months' period from January 1 to June 30 and from July 1 to December 31 in any year; and no clerical, office, service, or sales employee shall be permitted to work an average of more than forty (40) hours per week in any six weeks' period, provided that no such employee shall be permitted to work more than forty-eight (48) hours in any one week.

The above limitations shall not apply to:

(a) Employees in a technical, professional, supervisory, managerial, or executive capacity who are compensated on a basis of more than \$35.00 per week.

(b) Employees on emergency maintenance or emergency repair work involving breakdowns or the protection of life or property but in any such case at least one and one-third (1½) times the normal rate shall be paid for hours worked in excess of the maximum number of hours herein provided.

(c) Outside sales and service men.

(d) Watchmen, engineers, firemen, or pumpmen who may be permitted to work up to but not exceeding eighty-four (84) hours over any two-weeks period or in lieu thereof a maximum of fifty-six (56) hours in any week.

No employer shall knowingly permit any

employee to work for any time which, when totaled with that already performed with another employer or employers, exceeds the maximum permitted herein.

Section 2, Wages.—The minimum wage for mine, quarry, mill, or warehouse employees shall be at the rate of not less than 40c per hour in any city of 100,000 population or over or in the immediate trade area of such city; 40c per hour in that part of the continental United States west of the 108th longitudinal meridian (defined in this Code as the Pacific Coast Territory); 35c per hour in that part of the continental United States north of the 38th parallel of latitude and east of the 108th longitudinal meridian, including the entire States of Kansas and Oklahoma; 30c per hour in that part of the continental United States south of the 38th parallel of latitude and east of the 108th longitudinal meridian with the exception of the States of Kansas and Oklahoma.

The minimum wage for any clerical, office, service, or sales employee (except outside sales and service men) shall be at the rate of fifteen dollars (\$15) per week in any city of over 500,000 population or in the immediate trade area of such city; at the rate of \$14.50 per week in any city between 250,000 and 500,000 population or in the immediate trade area of such city; at the rate of \$14.00 per week in any city of between 2,500 and 250,000 population or in the immediate trade area of such city; and in towns of less than 2,500 population at the rate of \$12.00 per week. Population for the purposes of this Code shall be determined by reference to the 1930 Federal Census.

This article establishes a minimum rate of pay which shall apply irrespective of whether an employee is actually compensated on a time-rate, piecework, or other basis.

Sec. 3. Wages Above the Minimum.—Employers shall not reduce the rates of wages for employees whose rates are now in excess of the minimum rate of wages herein provided (notwithstanding that the number of hours worked in such employment may be hereby decreased), and where in any case an employer has not increased the rates of wages for such employees prior to the effective date of this Code by an equitable readjustment of all such wage rates, such employer shall readjust all such wage rates. This provision shall be interpreted in the same manner that paragraph 7 of the President's Reemployment Agreement has been interpreted by the Administrator in Interpretations Nos. 1 and 20.

Sec. 4. Child Labor.—No person under sixteen (16) years of age shall be employed in the industry. No person under eighteen (18) years of age shall be employed on machine operations.

Sec. 5. Collective Bargaining, Etc.—In compliance with Section 7 (a) of the Act it is provided:

(a) That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection;

(b) That no employee and no one seeking employment shall be required as a con-

dition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing; and

(c) That employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment, approved or prescribed by the President.

Sec. 6. Reclassification of Employees.—No employer shall reclassify employees or duties of occupations performed or engage in any other subterfuge for the purpose of defeating the purposes or provisions of the Act or of this Code.

Sec. 7. State Laws.—No provision in this Code shall supersede any State or Federal law which imposes on employers more stringent requirements as to age of employees, wages, hours of work, or as to safety, health, sanitary, or general working conditions, or insurance, or fire protection, than are imposed by this Code.

Sec. 8. Posting.—Each employer shall post adequate notices that each employee may, at his request, obtain without charge a copy of the particular Code applicable to his work.

Sec. 9. Infirm and Aged Employees.—A person whose earning capacity is limited because of age or physical or mental handicap may be employed on light work at a wage below the minimum established by this Code if the employer obtains from the state authority designated by the United States Department of Labor, a certificate authorizing his employment at such wage and for such hours as shall be stated in the certificate, but such employees shall not exceed five percent (5%) of any employer's total number of employees. Each employer shall file with the Code Authority a list of all such persons employed by him.

Waldo C. Holden of the American Federation of Labor objected in a general way to the wage and labor provisions. Lack of complete data regarding employment in the gypsum industry apparently prevented definite recommendations. He stated, however, that a 48-hour week even though the average for 6 months should remain at 40 hours would be undesirable. He asked for a 40-cent minimum wage rate for the entire country and objected to lower wages in the South, citing a report of the United States Bureau of Labor Statistics which showed the cost of living in Norfolk, Virginia, is 10 percent higher than in Portland, Maine.

Mr. Neale, in turn, supported Article III, especially that part dealing with hours of labor. He pointed out that gypsum products are semi-perishable and that the industry has practically no storage facilities. Demand fluctuates seasonally and even from week to week, and therefore production must be flexible. Mr. Neale exhibited two charts, one to indicate seasonal variations, showing that December sales normally amounted to only 46 percent of the August peak, and the other to show typical week-to-week fluctuation in the output of a representative company.

About 70% of the mills are located in semi-isolated locations, and Mr. Neale stressed the impossibility of procuring skilled labor if the work-week is cut below 40-48 hours. He stated that a flat 40-hour week would mean an average work-week throughout the year of only 29 hours because of time lost in slack months. On the other hand, a

48-hour maximum would result in about a 40-hour average.

According to Mr. Neale, quarry and mill employees in July, 1928, totaled 6,996. By June, 1929, the number had dropped to 5,870, and 2,280 in May, 1933, but had increased to 2,590 in July, 1933. He exhibited a chart showing hours of labor in selected operations. After presenting this summary of employment conditions in the gypsum industry, Mr. Neale estimated that even with continuation of present low tonnage, operations under the code would result in an increase of 16% in employment. With 1931 tonnage 60% more men would be able to find work, and 168% more if 1929 tonnage could be expected.

In commenting on the competitive position of gypsum Mr. Neale mentioned lime, lumber, and steel as the principal competing materials. He cited the labor provisions of the codes for these industries and pointed out that gypsum should be entitled to comparable hours and wage rates.

Office employees, said Mr. Neale, had declined from 1,162 in 1929 to 638 in May, 1933. The code would create places for at least 34 additional office employees. Commenting on the situation in the South, he stated that the wage rates would result in bringing the purchasing power of their employees to 1929 levels, but he mentioned further that only 8 mills are located in southern States.

U. S. Gypsum Co. Asks Tonnage Vote.—Article IV is a lengthy discourse setting up a Code Authority and outlining its powers and duties in part, as follows:

ARTICLE IV—ADMINISTRATION

Section 1. Code Authority.—There shall forthwith be constituted a Code Authority consisting of thirteen (13) persons to be selected in the following manner:

(A) Twelve (12) of whom shall be the Board of Directors of the Association, each of whom shall be entitled to one vote.

(B) One (1) of whom shall not be a director or member of the "Association" but shall be a member of the industry selected in writing by a majority of such non-association members of the industry, who shall be entitled to one vote.

In addition to membership as above provided, there may be not to exceed three members without vote, to be appointed by the President, to serve without cost to the Industry.

The Code Authority and any committee thereof must have thereon a representative of each member of the industry producing twenty-five per cent or more of annual industry tonnage, and a representative of one of the members of the industry having its entire plant facilities in the Pacific Coast Territory, each such representative to be a person actively connected with the business of such member. Any member of the Code Authority and of any committee thereof may appoint as his alternate any other person actively connected with the business of any member of the industry. No member of the industry shall have more than one representative on the Code Authority or any committee thereof, and no alternate shall be connected with any company already represented on the Code Authority or any committee thereof.

At any duly called meeting of the Code Authority or of any committee thereof a

three-quarters affirmative vote of the members present shall be required to make effective any action of such Code Authority or committee. A majority of the voting members of the Code Authority or any committee thereof shall constitute a quorum.

Mr. Neale explained that representation on the Code Authority was based on 1932 production, 94% being contributed by members of the association and 6% by non-members. On this basis the association was given 12 members on the Code Authority and all other companies were given 1 member.

John A. MacLeish, representing the U. S. Gypsum Co., gave an interesting company analysis of the industry, terminating in a request for a tonnage vote, as well as a member vote of the Code Authority. He stated that 50 of the 78 companies were small mixing plants; 25 were small companies with but a single plant; 5 had only one plant, although larger; 5 had two or more plants; and only 3 had several plants with nation-wide distribution. Recapitulating, he showed that 64% of the companies accounted for only 15% of production, and 16% of the companies accounted for the other 28%. Further, 3 companies comprise 70% of production, and U. S. Gypsum Co. accounts for 48%. No other company has more than 18-20%, according to Mr. MacLeish. Of a total invested capital in the industry, amounting roughly to \$90,000,000, U. S. Gypsum accounts for \$45,000,000.

In view of this important position in the industry, Mr. MacLeish suggested that his company should be entitled to greater recognition on the Code Authority. He recommended that Article IV be amended to provide for voting both by members and by tonnage. At the request of any member, a tonnage vote might be called for to supplement the three-quarters vote of members. In case of a stalemate the question would be referred to the Administrator for a decision. Mr. Neale then told the assistant deputy that he thought such a provision could be worked out to the mutual satisfaction of all.

Costs to Be Determined

Article V provides for determination of costs, the accounting procedure to include the following items:

1. Raw materials and transportation thereon.
2. Direct manufacturing or conversion cost.
3. Plant overhead or fixed expense.
4. Containers and transportation thereon.
5. Depreciation and depletion.
6. Selling and advertising.
7. Administrative and general expense.

In connection with these provisions S. J. Kelley of the Kelley Plasterboard Co., raised the question of whether this would result in raising prices of crude gypsum to mixing plants. If so, it would place them at a disadvantage in competition with completely integrated operations.

Howard Houston stated that he did not believe that Article V was practical and that

prices would increase beyond consumers' ability to pay, thereby defeating the purpose of the code. Mr. MacLeish also asked that the provisions be carefully studied before definite acceptance.

Publication of Prices

Mr. Neale supported Article VI, stating that publication of prices would be necessary to rehabilitate the gypsum industry. Article VI follows:

ARTICLE VI—PUBLICATION OF PRICES

Section 1. Price Publication.—Each member of the industry shall, on or before the effective date of this code, file with the Code Authority or such other agency or agencies as the Code Authority may designate, complete lists or schedules of prices and terms and conditions of sale of all industry products offered for sale by such member; and shall so file all subsequent changes therein or revisions thereof five (5) days prior to the effective date and publication of any such changes or revisions, which changes and revisions shall become effective at the end of said five (5) days unless the member filing shall cancel the same in writing at any time before such effective date; provided, however, that if any member shall receive notice of the filing of changes in or revisions of another member's price lists or schedules and terms and conditions of sale too late to file and make effective on the same date such changes or revisions in his own price lists or schedules and terms and conditions of sale as he desires to meet the changes and revisions already filed, then if such member shall file his changes or revisions at least twenty-four (24) hours before the effective date, the same shall become effective on the effective date of such other member's changes or revisions.

Such price lists or schedules and terms and conditions of sale and changes or revisions thereof, as aforesaid so filed, shall, for the purpose of this code, from and after the effective date thereof respectively be treated as the published price lists or schedules and terms and conditions of sale of the member filing the same; and may be distributed by the member filing the same to his trade only on and after the effective date thereof. The Code Authority shall immediately upon receipt thereof cause a copy of all such price lists or schedules and terms and conditions of sale and all changes therein and revisions thereof to be sent to each member of the industry as to which the same may be applicable.

The Code Authority shall designate as its agency for receiving and distributing price lists and schedules and terms and conditions of sale and changes in or revision thereof covering the Pacific Coast territory, in manner aforesaid, such committee as the members of the industry having one or more plants for the manufacture of industry products in that territory shall appoint for that purpose. Such committee shall, immediately upon receipt of any price lists or schedule and terms and conditions of sale or changes in or revisions thereof, send a copy thereof to the Code Authority or such agency as the Code Authority shall appoint for that purpose.

Price lists and schedules and terms and conditions of sale need not be filed covering sales of industry products by members of the industry to other members, except stucco for dry mixing. Price lists of special products manufactured by, not more than three members of the industry, when such special products are not used in or sold to persons connected with the building industry, need not be filed.

Sec. 2. Sales at Published Prices.—No member of the industry shall sell any of its industry products at a price or prices below or upon terms and conditions other than, stated in such member's published price lists or schedules and terms and conditions of sale, and changes therein or revisions thereof published and filed by such member.

Mr. Neale outlined the difficulties experienced by the industry in attempting to maintain a reasonable price structure. Similarity of products constitutes a real problem, price cuts are common, and the lowest bidder gets the business. Publication of prices will aid in eliminating unfair competition. Furthermore, failure to publish prices would work a hardship on other industries, notably lime. Publication of prices is provided for in the lime code. Obviously, companies dealing in both gypsum and lime might make concessions in prices of gypsum in order to make sales of both. Such a situation would handicap independent lime companies honestly trying to live up to the lime code.

Little opposition to Article VI having developed it seems likely that provision for price publication will be included in the final draft of the code.

Merchandising Plan.—Article VII providing for a merchandising plan was passed without comment. The article reads as follows:

ARTICLE VII

Section 1. Adoption of Merchandising Plan.—The Code Authority shall study marketing conditions and make recommendations to the industry for a merchandising plan for the sale and distribution of industry products containing such provisions as may be necessary or proper to insure fair selling methods by the industry, and to prevent unfair competitive practices, which plan may be adopted by any member of the industry and included in the member's terms and conditions of sale filed with the Code Authority.

Trade Practice Rules

Article VIII lists 21 trade practice rules which, according to Mr. Neale, correspond closely to those recommended by the Federal Trade Commission in 1929. Although amended slightly by Mr. Neale, they probably will remain virtually unchanged. Among the objectionable practices are commercial bribery, rebates, defamation of competitors, false branding, imitation of trademarks, shipments without orders, failure to state unit price, combination sales, substitution, splitting of compensation, discrimination in price, false classifications, and other unethical practices relating to contracts and jobs.

Cancellation Clause Requested

Article IX summarizes miscellaneous provisions as follows:

ARTICLE IX—MISCELLANEOUS

Section 1. Monopolies or Monopolistic Practices.—No provision of this Code shall be interpreted or applied in such manner as to permit monopolies or monopolistic practices, permit or encourage unfair competition, eliminate or oppress small enterprises or discriminate against them.

Sec. 2. Regional Application.—Articles V, VI, VII, and VIII hereof shall not apply to products sold for export outside conti-

nental United States or for shipment to Panama Canal Zone and Alaska.

Sec. 3. Patents.—Nothing contained in this code shall be construed as prohibiting any member of the industry from exercising all its and/or their lawful patent rights, or as requiring any member of the industry to do any act in conflict with the terms of a patent licensing agreement legally binding upon such member.

Sec. 4. Cancellation or Modification.—The President of the United States may from time to time cancel or modify any order, approval, license, rule, or regulation issued under Title I of the National Industrial Recovery Act.

Sec. 5. Amendments.—It is contemplated that from time to time amendments or supplementary provisions to this Code or additional codes may be submitted for the approval of the President of the United States to prevent unfair competition in price or other unfair or destructive competitive practices and to effectuate the other purposes and policies of Title I of the National Industrial Recovery Act. Such amendments, supplementary provisions, or additional codes may be presented by the Code Authority after the same have been submitted to the Industry upon such notice and hearing as the Administrator shall specify, and upon the approval of the President of any such amendment, supplementary provision, or additional code the same shall become a part of this code and effective as such.

Sec. 6. Violation.—Violation by any member of this industry of any of the provisions of this code or any rules or regulations issued thereunder or of any approved amendments hereof is an unfair method of competition and shall be subject to the penalties prescribed in the National Industrial Recovery Act.

Sec. 7. Approval.—This Code shall be in effect beginning the second Monday after its approval by the President and shall terminate on June 14, 1935, or the earliest date prior thereto on which the President shall by proclamation or the Congress shall by joint resolution declare that the emergency recognized by Section 1 of the National Industrial Recovery Act has ended.

Commenting on Article IX, Mr. Neale introduced several amendments. One provided that modifications of the code would have to be approved or disapproved by each company individually. Another stated that nothing in the code shall conflict with the constitutional rights of any company. Still another provided that the industry by a three-quarters vote of its members might terminate the code upon 30-days' written notice to the Administrator. This cancellation clause brought chuckles from the audience and smiles from the NRA representatives.

Before adjournment Mr. Lynch, the Assistant Deputy, mentioned the procedure necessary to complete negotiations for the code and expressed hope that the industry would be benefited by its adoption.

Year Book

American Standards Year Book (American Standards Association, New York City). Contains an index of approved American standards and uncompleted projects; helpful to all rock products producers in showing present status in standardization of specifications for their materials.

Digest of Foreign Literature

By F. O. Anderegg, Ph. D.

Consulting Specialist, Pittsburgh, Pa.

The Combination of Water with Cement.

After mixing cement and water for a short time the mix is centrifuged and the water so obtained has been analyzed by Paul Hänssel, Rudolf Steinherz and Carl L. Wagner. The effect of the time of mixing, the amount of mixing water and the degree of dehydration of the gypsum were found to have considerable effect on the results, as also the chemical composition of the cement and the method of burning. When the cement had been ground in the usual way the gypsum becomes more or less completely destroyed so that solution is very rapid to form almost immediately a supersaturated solution, from which it later disappears. The alkalis, on the other hand, continue to accumulate. A white portland cement gave only traces of alkali in solution. The amounts of salts dissolved increased with the amount of mixing water used. *Zement* (1933) 22, No. 45, p. 625; No. 46, p. 639.

Hydrothermal Synthesis with Pressure of Calcium Silicates.

Shoichiro Nagai, working under the direction of Prof. Eitel has heated a series of mixtures of lime and silica in the molecular proportions (a) 2:1, (b) 3:2, (c) 1:1, (d) 1:2, (e) 1:3 and (f) 1:5 at different steam pressures and for different periods and the resulting products were analyzed. From the first three he obtained $3\text{CaO} \cdot 2\text{SiO}_2$, but on longer heating of at higher pressures (c) changed to a 1:1 compound, while (b) finally showed a similar tendency. Mixes (d), (e) and (f) were brought into a 1:1 combination at first, but on prolonged heating at higher temperatures tended to change to the 2:3 compound, but with a different water content from that obtained from (a) and (b). The following hydrates were identified: $2\text{CaO} \cdot \text{SiO}_2 \cdot \text{H}_2\text{O}$, $3\text{CaO} \cdot 2\text{SiO}_2 \cdot 8\text{H}_2\text{O}$, $3\text{CaO} \cdot 2\text{SiO}_2 \cdot \text{H}_2\text{O}$, and $\text{CaO} \cdot \text{SiO}_2 \cdot 0.25 \text{H}_2\text{O}$. The second and third are new. *Cement and Cement Manufacture* (1933) 4, No. 10, p. 313.

The Measurement of Shrinkage in Cement Products.

The manner in which concrete shrinks and the differential strains set up have an important bearing on the development of shrinkage cracks, according to G. Frankel. With the aid of an Ammler shrinkage apparatus he was able to measure not only the shrinkage tendency in the specimen as a whole but also in various parts of the specimen. In this way he observed that in some cases the center actually shrank faster than the outer part. In other cases the opposite was true. *Tonindustrie Zeitung* (1933) 57, No. 93, p. 1096; No. 95, p. 1122.

The Association of Japanese Portland Cement Engineers

(Teikoku Building,

Osaka) held their twenty-first meeting in October, 1932. Several interesting papers were presented: The heat of setting of cements was followed by Mitzuzo Fujii and Shiro Yamamura by means of a special camera in which the film was rotated by clock work. The cement was made up to normal consistency and placed in a Dewar flask, with a thermometer. Light passing through the stem of the latter then passed into the camera where the height of the thread was recorded. They failed to secure a very good correlation between the heating and the setting reactions. The higher strength cements developed more heat, but the curves were similar. The addition of calcium chloride speeded up the heat evolution.

Nobuyuki Yamaoto found that storage of cement in jute bags resulted in considerable loss of strength, more in open sheds than in warehouses, but the use of a layer of asphalted paper greatly reduced the loss. On testing the workability by the slump method, much greater losses were noted than in the strength experiments. Again the cement given the extra protection of asphalt paper gave much better results.

The action of calcium hydroxide on the hydration of aluminous cement was studied by Katsuzo Koyanagi. According to the amount of lime added he was able to secure two different crystalline products. With small amounts of lime the compound $2\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 7.5\text{H}_2\text{O}$ was obtained, belonging to the hexagonal system. The crystals are optically negative with indexes, 1.520 and 1.512. When larger amounts of lime were added various modifications of regular crystals were obtained, depending upon the amount of lime. But analyses proved these to be $3\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 5.8 \text{H}_2\text{O}$, with index of refraction, 1.605.

In the air separation of cements, Tadao Kitasawa has found that the combination of an electrical dust collector with the Pearson air elutriator will prevent the escape of the finer sizes.

Considerable discussion was given as to proper methods of testing cement for concrete. Prof. Minoru Hamada has found that the use of standard sand in the usual way gives approximate results only, but by using the same water-cement ratio as is to be used in concrete, much better correlation may be expected. On experimenting with different sands, Mangoro Komuro and Yoshiaki Sanada have found that the strength and workability for a constant water-cement ratio and cement-sand ratio varied considerably according to the nature of the sand. If the cement-sand ratio is varied, with constant workability

and water content the strength was nearly constant. A special graded quartz sand, with the fractions 20, 40, 30, 8 and 2% retained, on the No. 8, 14, 28, 48 and 100-mesh sieves, respectively, gave highest strengths and was recommended for replacing standard, sized sand.

Taro Tanaka working at constant slump (4 in.) and with a water-cement ratio of 0.65, tested a large number of sands which had been separated with a No. 8 sieve. Differences in the results obtained with different sands indicated the grading to be a factor which must be considered. On taking one natural quartz sand and comparing it with a mixture of two parts of the same sand and one part ground fine so that 23% of the mixed sand passed the 100-mesh, the latter was found to give twice the strength of the former.

Comparison of the Rotary Kiln and the High-Capacity Shaft Kiln Employing a New Burning Process.

O. Frey describes the results of efforts to provide the shaft kiln with the advantages obtained with a rotary kiln. Where the wet process is used the first problem is to secure adequate drying and this, it is proposed to accomplish, by an extra shaft to one side and above the main kiln where the waste heat from the latter is utilized in drying the feed. When dried the raw mix passes through a screen which eliminates material below 0.12 in. This sizing of the feed permits the air necessary for combustion to pass up through the bed uniformly. About three-fourths of the fuel is mixed with the raw materials and only about one-fourth remains to be blown in. In this way the burner can secure good visual control and an even burn since the flame plays over the whole surface of the kiln. The new kiln compares favorably with the rotary kiln in output and quality of product, with the advantages in fuel saving characteristic of the shaft kiln. The factors contributing to the result include (1) the use of a multicord press for the filter mud; (2) the method of charging into the drying shaft; (3) the drying and preheating in a separate shell; (4) the hydraulically operated automatic discharge apparatus. *Cement and Cement Manufacture* (1933) 4, No. 1, p. 313.

Natural carbon dioxide is being found in wells in the Imperial Valley, California. Because of its possibilities for refrigeration of fruit and vegetable cars, interest in immediate development is concentrated on carbon dioxide production for dry ice to be used in Imperial Valley shipments.

Recent Quotations on Rock Products Securities

Stock	Date	Bid	Asked	Dividend	Stock	Date	Bid	Asked	Dividend
Allentown P. C., com. ⁴⁷	12-19-33	2½	4½		McCready-Rodgers, com. ⁴⁷	12-19-33	6	9	
Allentown P. C., pfd. ⁴⁷	12-19-33	5	7		McCready-Rodgers, 7% pfd. ⁴⁷	12-19-33	30	40	
Alpha P. C., com. ⁴⁷	1-31-34	19	19½		Medusa P. C., com. ⁴⁷	1-30-34	9½	10	
Alpha P. C., pfd. ⁴⁷	1-2-34	75	98		Medusa P. C., pfd. ⁴⁷	12-19-33	30	35	
Amalgamated Phos. O's, 30 ⁴⁷	12-19-33	95	98		Michigan L. and O., com. ⁴⁷	12-19-33	45	50	
American Aggregates, com. ⁴⁷	12-19-33	1	2		Missouri P. C. ⁴⁷	1-31-34	8½	9	
American Aggregates, pfd. ⁴⁷	12-19-33	6	10		Monarch Cement, com. ⁴⁷	12-19-33	40	50	
American Aggregates O's, w.w. ⁴⁷	12-19-33	25	30		Monolith P. C., com. ⁴⁷	1-27-34	1¾	....
American Aggregates O's, ex. ⁴⁷	12-19-33	20	25		Monolith P. C., pfd. ⁴⁷	1-27-34	3¾	5	
American L. and S., 1st 7's ⁴⁷	12-19-33	50	55		Monolith P. C. units ⁴⁷	12-19-33	6	8	
Arundel Corp., com. ⁴⁷	1-23-34	16¾	....	25c qu. Jan. 2, '34	Monolith P. C. 1st Mtg. O's ⁴⁷	12-19-33	75	80	
					Monolith Portland, Midwest ⁴⁷	12-15-33	50c	75c	
Bessemer L. and C., Class A ⁴⁷	12-19-33	3	5		National Cem. (Can.), 1st 7's... 10-13-33	No market			
Bessemer L. and C., 1st 6½'s ⁴⁷	12-19-33	14	16		National Gypsum A., com. ⁴⁷	1-31-34	6¾	7¼	
Bessemer L. and C., cert. of dep. ⁴⁷	12-19-33	14	16		National Gypsum, pfd. ⁴⁷	1-31-34	70½	72½	
Bloomington Limestone O's ⁴⁷	12-19-33	8	10		National Gypsum O's ⁴⁷	12-19-33	80	83	
Boston S. and G., new com. ⁴⁷	12-11-33	1	3		National L. & S., 6½'s, 1941 ⁴⁷	12-19-33	60	70	
Boston S. and G., new 7% pfd. ⁴⁷	12-11-33	5	10		Nazareth Cement, com. ⁴⁷	12-19-33	2	4	
Boston S. and G., 7's, 1934 ⁴⁷	12-11-33	40	60		Nazareth Cement, pfd. ⁴⁷	12-19-33	25	30	
California Art Tile, A ⁹	12-11-33	1	1½		Newaygo P. C. 1st 6½'s ⁴⁷	12-19-33	37	40	
California Art Tile, B ⁹	12-11-33	....	1		New England Lime O's, 1935 ⁴⁷	12-11-33	8	10	
Calaveras Cement, com. ⁴⁷	1-27-34	7½	2	1.75 qu. Jan. 15, '34	N. Y. Trap Rock 1st 6's, 1946... 1-24-34	58¾	....	
Calaveras Cement, 7% pfd. ⁴⁷	1-27-34	47½	75		N. Y. Trap Rock, 7% pfd. ⁴⁷	12-19-33	60	65	
Canada Cement, com. ⁴⁷	1-23-34	10	10½		North Amer. Cement 1st 6½'s ⁴⁷	12-19-33	15	20	
Canada Cement, pfd. ⁴⁷	1-29-34	45	45¾		North Amer. Cement, com. ⁴⁷	12-19-33	1	2	
Canada Cement, 5½'s, 1947.....	1-23-34	86	88½		North Amer. Cement, 7% pfd. ⁴⁷	12-19-33	2	4	
Canada Crushed Stone bonds ⁴⁷	12-11-33	63	67		North Shore Mat. 1st 6's ⁴⁷	12-19-33	35	40	
Canada Crushed Stone, com. ⁴⁷	12-11-33	5 (nominal)	6¾		Northwestern States P. C. ⁴⁷	1-31-34	39	....	1.50 Jan. 2, '34
Certainite Products, com. ⁴⁷	1-31-34	6¾	6¾		Northwestern Portland, Midwest ⁴⁷	12-19-33	28	32	
Certainite Products, pfd. ⁴⁷	1-31-34	27½	28½		Ohio River S. and G., com. ⁴⁷	1-30-34	....	5	
Certainite Products, 5½'s, '48... 1-31-34	1-31-34	67	....		Ohio River S. and G., 1st pfd. ⁴⁷	1-30-34	....	50	
Cleveland Quarries.....	1-30-34	....	25		Ohio River S. and G., 2nd pfd. ⁴⁷	1-30-34	20	....
Consol. Cement, 1st 6½'s A ⁴⁷	12-19-33	6	8		Ohio River S. and G., O's ⁴⁷	12-19-33	8	12	
Consolidated Cement, pfd. ⁴⁷	12-19-33	½	1		Oregon P. C., com. ⁴⁷	12-19-33	10	13	
Consolidated Oka S. and G. (Canada) 6½'s ⁴⁷	10-13-33	....	20		Oregon P. C., pfd. ⁴⁷	12-19-33	60	65	
Consolidated Oka S. and G. (Canada), pfd. ⁴⁷	10-13-33	No market	....		Pacific Coast Aggr., com. ⁴⁷	12-11-33	....	10c	
Consol. Rock Prod., com. ⁴⁷	12-19-33	½	1		Pacific Coast Aggr., pfd. ⁴⁷	12-11-33	15c	30c	
Consol. Rock Prod., pfd. ⁴⁷	12-19-33	1	2		Pacific Coast Aggr., 6½'s, '44... 10-13-33	15	17		
Consol. Rock Prod., units ⁴⁷	12-19-33	2	3		Pacific Coast Aggr., 7's, 1939... 10-13-33	1	3		
Consol. S. and G., pfd. (Can.) ⁴⁷	10-13-33	No market	....		Pacific Coast Cement O's, 1937 ⁴⁷	12-19-33	40	44	
Construction Mat., com. ⁴⁷	12-19-33	1	2		Pacific P. C., com. ⁴⁷	1-27-34	4¼	....
Construction Mat., pfd. ⁴⁷	12-19-33	3	4		Pacific P. C., pfd. ⁴⁷	1-27-34	30	....
Consumers Rock & Gravel, 1st Mtg. O's, 1948 ⁴⁷	12-19-33	37	40		Pacific P. C. O's, 1935 ⁴⁷	12-19-33	90	92	
Coosa P. C., 1st 6's ⁴⁷	12-19-33	10	15		Pacific P. C. O's, pfd. ⁴⁷	1-22-34	28	....
Coplay Cement Mfg., pfd. ⁴⁷	12-19-33	5	7		Peerless Cement, com. ⁴⁷	12-19-33	¾	¾	
Coplay Cement Mfg., O's, '41 ⁴⁷	12-19-33	35	40		Peerless Cement, pfd. ⁴⁷	12-19-33	1	2	
Dewey P. C., com. ⁴⁷	12-19-33	50	60		Penn.-Dixie Cement, com. ⁴⁷	1-31-34	6	6¼	
Dolese and Shepard.....	1-31-34	10	12		Penn.-Dixie Cement, pfd. ⁴⁷	1-31-34	19	24	
Dufferin Pav. & Cr. Stone, com. ⁴⁷	1-29-34	1½	2½		Penn.-Dixie Cement O's A... 1-24-34	7¼	....	
Dufferin Pav. & Cr. Stone, pfd. ⁴⁷	1-29-34	20	25		Penn. Glass Sand Corp., pfd. ⁴⁷	12-19-33	65	70	1.75 Jan. 2, '34
Edison P. C., com. ⁴⁷	12-19-33	1	3		Penn. Glass Sand Corp., O's ⁴⁷	12-19-33	92	95	
Edison P. C., pfd. ⁴⁷	12-19-33	4	6		Petoskey P. C., com. ⁴⁷	1-31-34	1	1½	
Federal P. C. 6½'s, 1941 ⁴⁷	12-19-33	28	32		Petoskey P. C. O's, 1941.....	11-21-33	39	44	
Giant P. C., com. ⁴⁷	12-19-33	2	4		Petoskey P. C. O's, 1935.....	12-19-33	39	43	
Giant P. C., pfd. ⁴⁷	12-19-33	6	10		Phosphate Mining Co. (N. Y.), com. ⁴⁷	12-19-33	No market	No market	
Gyp. Lime & Alabastine, Ltd., 1948.....	1-23-34	65	68		Port Stockton Cem., com. ⁴⁷	12-11-33	No market	No market	
Gyp. Lime & Alabastine 5½'s, 1948.....	1-23-34	65	68		Republic P. C. O's, 1943.....	11-21-33	63	68	
Hermitage Cement, com. ⁴⁷	12-19-33	10	15		Riverside Cement, A ⁴⁷	1-27-34	8	11	47½c Feb. 1, '34
Hermitage Cement, pfd. ⁴⁷	12-19-33	35	40		Riverside Cement, B ⁴⁷	12-19-33	1	2	
Ideal Cement 5's, 1943.....	1-2-34	97	99		Riverside Cement, pfd. ⁴⁷	1-27-34	73	75	1.50 qu. Feb. 1, '34
Ideal Cement, com. ⁴⁷	1-31-34	27	30	25c qu. Jan. 6, '34	Rockland and Rockport Lime, 1st pfd. ⁴⁷	12-19-33	1	2	
Indiana Limestone O's ⁴⁷	12-19-33	15	20		Sandusky Cement O's ⁴⁷	12-19-33	30	35	
International Cement bonds, 5's 1-31-34	1-31-34	86½	....	Semi-annual int.	Sandusky Cement O's ⁴⁷ , 1932-1937 ⁴⁷	12-19-33	35	40	
International Cement, com. ⁴⁷	1-31-34	34½	34¾		Santa Cruz P. C., com. ⁴⁷	1-27-34	50	58	1.00 qu. Jan. 2, '34
Kelley Island L. and T. ⁴⁷	1-31-34	10½	12½		Schumacher Wallboard, com. ⁴⁷	1-27-34	¾	4	
Ky. Cons. Stone, 6½'s, 1933... 11-18-33	11-18-33	5	6		Schumacher Wallboard, pfd. ⁴⁷	1-27-34	3	....
Ky. Cons. Stone, com. ⁴⁷	12-19-33	....	1		Signal Mt. P. C., units ⁴⁷	12-19-33	10	15	
Ky. Cons. Stone, pfd. ⁴⁷	12-19-33	....	5		Southwestern P. C., units ⁴⁷	12-19-33	160	175	
Ky. Cons. Stone, 7% pfd. ⁴⁷	12-19-33	....	5		Southwestern P. C., com. ⁴⁷	12-19-33	25	30	
Ky. Cons. Stone, 1st Mtg. O's ⁴⁷	1-30-34	5	6		Southwestern P. C., pfd. ⁴⁷	12-19-33	75	90	
Ky. Cons. St. V. T. C. ⁴⁷	12-19-33	....	1		Standard Paving & Mat. (Canada), com. ⁴⁷	1-29-34	3¼	3¾	
Ky. Rock Asphalt, com. ⁴⁷	1-30-34	6	8		Standard Paving & Mat., pfd. ⁴⁷	1-29-34	2¼	....
Ky. Rock Asphalt, pfd. ⁴⁷	1-30-34	6	8		Superior P. C., A. ⁴⁷	12-15-32	17½	19¼	
Ky. Rock Asphalt 6½'s, 1935... 1-30-34	1-30-34	55	59		Superior P. C., B. ⁴⁷	12-15-33	6	7	
Kentucky Stone, com. ⁴⁷	8-19-33	....	¾		Trinity P. C., units ⁴⁷	12-19-33	25	30	
Kentucky Stone, pfd. ⁴⁷	8-19-33	....	10		Trinity P. C., com. ⁴⁷	12-19-33	5	10	
Lawrence P. C. ⁴⁷	1-24-34	12	15½		Trinity P. C., pfd. ⁴⁷	12-19-33	20	25	
Lawrence P. C. 5½'s, 1942.....	1-3-34	53	....		U. S. Gypsum, com. ⁴⁷	1-31-34	47¾	48¼	25c qu. Jan. 2, '34
Lehigh P. C., com. ⁴⁷	1-31-34	18½	19½		U. S. Gypsum, pfd. ⁴⁷	1-31-34	117	118	1.75 qu. Jan. 2, '34
Lehigh P. C., pfd. ⁴⁷	1-31-34	74	90	87½c qu. Jan. 2, '34	Wabash P. C. ⁴⁷	12-19-33	5	6	
Louisville Cement ⁴⁷	12-19-33	65	75		Warner Co., com. ⁴⁷	12-19-33	3	5	
Lyman-Richey 1st 6's, 1935 ⁴⁷	12-19-33	80	90		Warner Co., 1st 7% pfd. ⁴⁷	12-19-33	15	20	
Marbelite Corp., com. (cement products) ⁹	12-11-33	5c	40c		Warner Co. O's, 1944 w.w. ⁴⁷	12-29-33	12¼	20	
Marbelite Corp., pfd. ⁹	12-11-33	25c	....		Warner Co. O's, 1944, ex.w. ⁴⁷	12-29-33	12¼	16	
Marquette Cement, com. ⁴⁷	1-12-34	11½	12½		Whitehall Cem. Mfg., com. ⁴⁷	12-19-33	15	20	
Marquette Cement, pfd. ⁴⁷	12-19-33	50	53		Whitehall Cem. Mfg., pfd. ⁴⁷	12-19-33	30	35	
Marquette Cem. Mfg. 1st 5's, 1930 ⁴⁷	12-19-33	65	75		Wisconsin L. & C., 1st 6's, '33 ⁴⁷	12-19-33	70	90	
Marquette Cem. Mfg. 1st 6's, 1935 ⁴⁷	12-20-28	60	65		Wisconsin L. & C. 6½'s ⁴⁷	12-19-33	70	90	
Material Service Corp. ⁴⁷	12-19-33	4	6		Wolverine P. C., com. ⁴⁷	12-27-33	....	3	
					Yosemite P. C., A com. ⁴⁷	1-27-34	1½	2½	
								</	

Quotations by: ⁹A. E. White Co., San Francisco, Calif. ¹²James Richardson & Sons, Ltd., Winnipeg, Man. ¹⁴First Wisconsin Co., Milwaukee, Wis. ¹⁷Wisc. Hobbs & Arnold, Boston. ⁴⁰Martin Judge, Jr., and Co., San Francisco, Calif. ⁴²Nesbitt, Thompson & Co., Toronto. ⁴⁶First Union Trust & Savings Bank, Chicago, Ill. ⁴⁷Anderson Plotz and Co., Chicago, Ill.

Recent Dividends Announced

Arundel Corp., com., no par value (qu.).....	\$0.25	Jan. 2, 1934
Calaveras Cement Co., 7% com. pfd. (qu.)..	1.75	Jan. 15, 1934
Coronet Phosphate Co., com.	1.00	Jan. 20, 1934
Ideal Cement Co. (qu.)	.25	Jan. 6, 1934
Northwestern States Portland Cement Co., com.	1.50	Jan. 2, 1934
Pennsylvania Glass Sand Corp., pfd.....	1.75	Jan. 2, 1934
Riverside Cement Co., Class A, \$1¼ cum. par .....	.47½	Feb. 1, 1934
Riverside Cement Co., \$6 cu. 1st pfd (qu.)..	1.50	Feb. 1, 1934

Rockland and Rockport Lime Corp.: \$10,000 certificate of deposit, 6% first mortgage bond, due 1940, sold recently at auction in Boston, Mass., for \$501.

Riverside Cement Co., Riverside, Calif.: Company's net earnings for the year 1933 were \$401,042 after all charges including provision for Federal income tax and \$246,232 for depreciation and depletion. Cash increased during 1933 to the extent of \$178,572. Since its organization in 1928, the company has retired 10,566 shares of first preferred stock without making a corresponding reduction in its stated capital. During 1933 account was taken of this retirement by the reduction of the company's stated capital to the extent of \$1,056,600. This sum was credited to capital surplus. The number of shares of first preferred stock now outstanding is 54,434, of which 5,858 shares have been purchased for account of the company for future retirement. Notwithstanding that during the depression years, 1930-33 inclusive, the sum of \$1,252,206 has been set aside from earnings for depreciation and depletion of the company's properties, during 1933 the additional sum of \$364,936 was appropriated from capital surplus as a special provision for depreciation of the company's Oro Grande plant. During the year the company adjusted its holdings of stocks and bonds to current market prices and also revalued its investment in non-operating properties—these adjustments resulting in a charge against capital surplus of \$346,833 of which sum \$121,584 represents realized loss upon subsequent sale of securities.

The company has recently strengthened its essential plant structures so as to provide the factor of safety against earthquake stresses which was recommended in the report of the Joint Technical Committee on Earthquake Protection, dated June, 1933. The work of strengthening will be completed during February.

The company paid dividends upon its first preferred stock during 1933 in the sum of \$306,867, at the established rate of \$6 per share. At the meeting of the board of directors, on January 8, 1934, the regular quarterly dividend of \$1.50 per share upon the first

preferred stock was declared, payable February 1, 1934; a dividend of 47½c per share was also declared upon the outstanding "A" common stock, payable February 1, 1934. This dividend upon the "A" stock is not to be regarded as marking the resumption of regular dividends upon this class of stock. From time to time the directors will give especial consideration to the question of dividends upon the "A" stock and will declare such dividends if and as the earnings and prospects of the company seem to them to make dividends appropriate.

The directors do not undertake to predict the future course of the company's business, closely related as it is to the complicated business and economic situation of the country as a whole. Throughout the depression they have conducted the affairs of the company with these purposes in view: the payment of a just and living wage to employees; the rigid control to the minimum of all other expenditures; the unremitting practice of research for the discovery of improved products, one fruit of which has been the development of the special low-heat content used in building the Pine Canyon dam and now in use at Boulder dam; the constant improvement of equipment and personnel; the maintenance of a sound financial position; and the payment of dividends carefully measured by the company's earnings and prospects and by the responsibility of the directors to the various classes of stockholders.

Since August the company has operated under the provisions of the National Industrial Recovery Act. The cost of its products has been substantially increased thereby, but thus far the company has been able to avoid any increase in selling price. The company has endeavored to support the government's recovery program in letter and in spirit and will continue to do so.

BALANCE SHEET OF RIVERSIDE CEMENT CO.

(As of December 31)

ASSETS		1933	1932
Cash	\$	1,041,669	\$ 869,097
Securities		47,880	251,823
Receivables: net		394,359	270,232
Inventories		746,946	1,021,669
Total current	\$	2,230,854	\$ 2,406,821
Treasury stock		345,356	278,258
Other investments		517,210	673,245
Deferred charges		72,813	51,869
†Real estate, plant and equipment		7,347,775	7,873,989
Total assets	\$	10,514,008	\$11,284,183
LIABILITIES			
Accounts payable and accrued expenses	\$	77,202	\$ 83,107
Reserve for federal and other taxes		49,539	.....
Total current	\$	126,741	\$ 83,107
Other reserves		102,579	115,852
Sundry items		52,930	57,444
Capital stock		18,495,900	9,552,500
Earned surplus		458,825	251,416
Appropriated surplus		193,629	178,425
Capital surplus		1,083,403	1,045,439
Total liabilities	\$	10,514,008	\$11,284,183

*Representing 5,858 shares of first preferred held in treasury. †Less reserves for depreciation and depletion. ‡Includes reserve for taxes. §Represented by 54,434 shares of \$6 first preferred (no par); 240,000 shares of class A, \$1.25 cumulative (no par), and 345,000 shares of no par class B.

Warner Co., Philadelphia, Penn.: Announces that the plan of readjustment of debt and capitalization of the company, dated May 4, 1933, has been declared operative and that the new securities to be issued under the plan will be ready for delivery on February 15, 1934. The action follows the approval of stockholders of the plan on December 4, last, and similar approval of committees representing bondholders, first preferred stockholders and common stockholders.

Under the terms of the plan, present security holders can exchange their holdings on the following basis:

(a) For each \$1,000 principal amount of first mortgage 6% sinking fund bonds, due April 1, 1944, the same \$1,000 bond appropriately stamped with a legend to the effect that it is subject to the terms of a supplemental indenture, with 18 1% interest coupons attached to take the place of six 3% coupons maturing April 1, 1933; October 1, 1933; April 1, 1934; October 1, 1934; April 1, 1935, and October 1, 1935.

(b) For each share of \$7 first preferred stock, one share of new 7% first preferred stock with the par value of \$50 a share and two shares of new common stock with the par value of \$1 a share.

(c) For every five shares of common stock of no par value one share of new common stock with the par value of \$1 a share. Scrip will be issued for fractional shares of the new common stock.

Northwestern States Portland Cement Co., Mason City, Ia., has paid a dividend of 1½% on common stock earnings for the fiscal year which ended November 30, 1933. The annual report states: "Despite reduction in demand and shipments of approximately 40% less than 1932, duplicating a similar falling off in 1931, the company has again materially strengthened its financial structure. Cooperation with the President's program, together with reduced production, has put up costs of manufacture, but the more stable price situation and strenuous economies in many directions have resulted in worthwhile improvement in the company's operating profits."

BALANCE SHEET OF NORTHWESTERN STATES PORTLAND CEMENT CO.

(As of November 30, 1933)

ASSETS		
Plant and equipment (Mason City)		\$6,542,394.52
Plant and equipment (Gilmore City)		565,611.67
Cement stock and materials in process		394,732.14
Inventories		229,049.95
Current assets		863,546.86
Investments and funds at interest		1,163,179.11
		\$9,758,514.25
LIABILITIES		
Capital stock		\$5,250,000.00
Surplus		89,831.15
Current liabilities		100,563.65
Reserves: (Depreciation, depletion, etc.)		4,318,119.45
		\$9,758,514.25

Cement Products

TRADE MARK REGISTERED WITH U. S. PATENT OFFICE

Ready-Mixed Concrete Producers Discuss Code of Fair Competition

A REPRESENTATIVE group of ready-mixed concrete producers met in Cincinnati, Ohio, January 27, under the auspices of the National Ready Mixed Concrete Association to discuss progress on the code of fair competition for this industry, the possible effect of changes in the code for the cement industry, and other matters of vital importance. H. F. Thomson, president, General Material Co., St. Louis, Mo., president of the association, presided.

The code for the ready-mixed concrete industry is completed and awaiting signature of National Recovery Administrator Johnson. J. E. Burke, president of the Ready Mixed Concrete Division, J. K. Davison & Bro., Pittsburgh, Penn., chairman of the temporary code committee, explained the progress on the code at length.

There was a good deal of discussion as to the effect of the suspension of the cement code provisions for direct sale of cement by manufacturers to ready mixed concrete producers. A considerable number of concrete producers are building supply dealers also, so that it is probable that their sympathies were with the dealers in their present controversy with cement manufacturers over direct sales of cement to various units of government, railways, contractors, etc.

It was brought out that if ready mix concrete producers were compelled to pay dealer prices for cement it would tend to restrict the use of concrete in favor of other materials. If, on the other hand, contractors were compelled to buy through dealers, and ready mixed producers could still buy cement direct, the effect would be favorable to the use by contractors of purchased ready mixed concrete.

Some ready mixed concrete producers prefer to buy their cement through dealers, even though they have the right to buy direct from manufacturers. The reason is, chiefly, that these producers have found it advantageous to do this. Where close coöperation exists between dealer and producer, the dealer has been a very helpful factor in selling ready mixed concrete. Also it saves the producer stocking several brands of cement.

The problem was obviously too complicated for the ready mixed concrete pro-

ducers to come to any agreement. However, a statement in behalf of the ready mixed concrete industry by Stanton Walker, director of engineering, National Ready Mixed Concrete Association, January 15, at a hearing on the dealer opposition to the cement code, was read and approved. Following are some extracts from Mr. Walker's testimony:

"The ready mixed concrete manufacturer is an important customer of the cement industry's products. Although the industry is relatively new, having grown from practically nothing in about 1925 to some 300 to 350 operators who purchased approximately 5,000,000 bbl. of cement during 1932, when construction was at a low ebb. In previous years a fewer number of companies purchased in the neighborhood of 10,000,000 to 12,000,000 bbl. of cement. This cement was purchased in relatively large lots, and, while some proportion of it was handled through a dealer, in practically no case was any necessary service rendered by him. The average mixed concrete operator is fully equipped to stock relatively large quantities of cement and other materials and does not require the handling service of the dealer.

"Organizations engaged in the manufacture of ready mixed concrete fall into four principal classifications, as follows:

- "1. Those engaged solely in the manufacture and sale of ready mixed concrete.
- "2. Those owned by, or allied with, producers of sand and gravel, or crushed stone, or slag—important constituents of concrete.
- "3. Those owned by or allied with dealers in the building supply trade; and
- "4. Those owned by, or allied with, companies which are both producers of materials and dealers in the building supply trade.

"The latter two classifications form an important part of the industry, but the numbers in them do not represent a substantial majority of the industry. Fair competition can exist only if all members of the industry are permitted to purchase cement and other materials on the same basis. It will be recognized at once that this condition would not exist if certain members of the ready mixed concrete industry were required to purchase cement through the dealer because he was not a dealer.

"If cement were sold through the dealer to those ready mixed concrete manufacturers who are not dealers, there would be an immediate advantage of 25 to 75 cents per cubic yard of concrete (in the cost of manufacture) to the operator owned by or allied with a dealer. This would create a monopoly for the members of the industry falling into the two latter classifications, previously outlined, and would also extend a strong invitation for other ready mixed concrete manufacturers to enter the dealer field. That the unfairness of such competitive relationships is recognized by the industry is well demonstrated by the following excerpt from the Code of Fair Competition for the Ready Mixed Concrete Manufacturing Industry, which is now in the hands of the National Recovery Administration:

"The cost of purchased ingredients of the concrete shall be taken as the invoice price thereof. Where one or more of the ingredients for the concrete are manufactured by a member of the industry, their cost shall be taken as the regular sales price quoted for such ingredients for sale to others at the same point of delivery and under similar conditions of sale."

The ready mixed concrete manufacturer performs for the consumer a function essentially the same as that performed by the dealer in that he purchases the ingredients for concrete and sells them direct to the consumer in the form of mixed concrete ready for use. He is in direct competition with the seller of the separate ingredients and, if he is required to purchase his materials at the same price, at which his competitor sells them, he is being discriminated against and cannot long survive in the face of such competitive practices.

"A homely illustration affords a good analogy. If the baker of bread were required to buy his flour from the corner grocer, he would be in the same position as the ready mixed concrete operator required to purchase his cement through a dealer.

"Certain ready mixed concrete manufacturers have found it to their advantage, on account of special conditions surrounding their operations, to purchase cement through a dealer. That advantage comes from some service rendered by the dealer to that particular operator, either in the handling of the materials or in the sale of the product.

"The construction industry is recognized as a most important factor in restoring the purchasing power of our Nation. If it is to play the role assigned to it, economic waste must be eliminated at every point. The payment of a commission to a middleman who renders no service cannot be classified as other than economic waste.

Registration—Producers

Avril, A. C., Avril Tru-Batch Concrete, Inc., Cincinnati, Ohio.
 Bird, Paul P., Boston Sand & Gravel Co., Cambridge, Mass.
 Burke, J. E., Ready Mixed Concrete Division, J. K. Davison & Bro., Pittsburgh, Penn.
 Butterworth, A. C., General Material Co., St. Louis, Mo.
 Campbell, J. A., Ready Mixed Concrete Corp., Minneapolis, Minn.
 Compton, R. L., Avril Tru-Batch Concrete Co., Cincinnati, Ohio.
 Cook, George W., Ready Mixed Concrete Co., Covington, Ky.
 Cooper, G. W., Cooper Supply Co., Detroit, Mich.
 Gauntlett, Geo. W., Pioneer Sand & Gravel Co., Seattle, Wash.
 Haines, C. E., Mixed Concrete Co., Columbus, Ohio.
 Howard, Walter E., The Howard Concrete Producing Co., Cincinnati, Ohio.
 Kimmel, A. W., Ready Mixed Concrete Corp., Dayton, Ohio.
 Kling, J. D., Metropolitan Concrete Co., Cleveland, Ohio.
 Maloney, Chas. P., Maloney Concrete Co., Washington, D. C.
 McCracken, Jas. F., American Builders Supply Co., Louisville, Ky.
 Miller, F. J., Ready Mixed Concrete Co., Covington, Ky.
 Richter, Louis, Richter Concrete Corp., Cincinnati, Ohio.
 Riehl, Geo. H., Avril Tru-Batch Concrete Co., Cincinnati, Ohio.
 Shiely, J. L., Guaranteed Concrete Co., St. Paul, Minn.
 Sullivan, John B., The Liberty Corp., Philadelphia, Penn.
 Thom, L. G., Ready Mixed Concrete Corp., Richmond, Va.
 Thomson, H. F., General Material Co., St. Louis, Mo.
 Walker, Stanton, National Ready Mixed Concrete Association, Washington, D. C.
 Warner, Julius J., Richter Concrete Corp., Cincinnati, Ohio.
 Wilson, R. S., Big Rock Stone & Material Co., Little Rock, Ark.

John H. Odenbach, Shipbuilder

Rochester, N. Y., Quarry Operator, Responsible for New Type of Self-Unloading Bulk Carrier

JOHN H. ODENBACH, known in the crushed stone industry and the sand and gravel industry as president of the Dolomite Products Co., Rochester, N. Y., producer of much mineral aggregate and agricultural limestone, has extended his sphere of operations again. In 1933 he formed a subsidiary

Corp., of which Mr. Odenbach is president and general manager. The Marine corporation has already built two Diesel-motored ships, the first of which has been placed in commission for the New Jersey Clay Products Co., South River, N. J.—the *William F. Kenny*. The other is the *Dolomite*, built

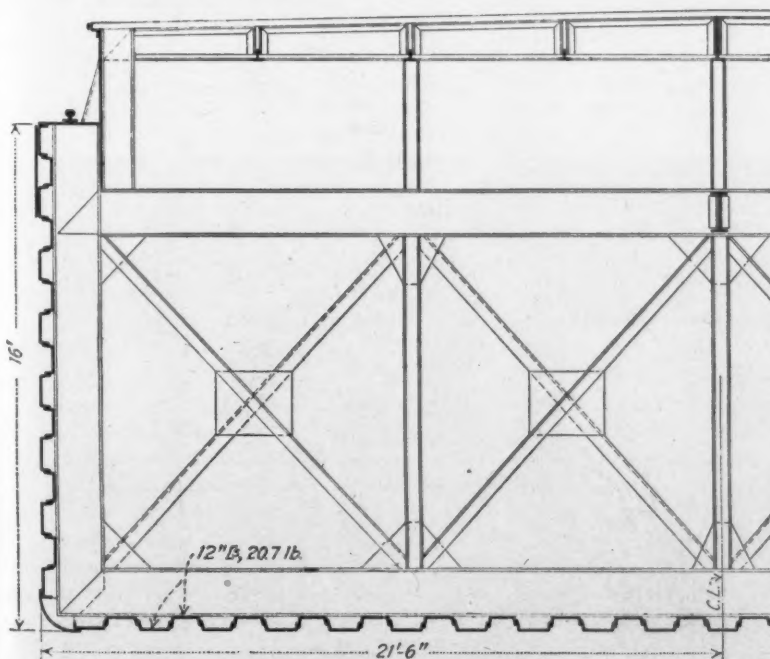


Semi-submersible Diesel ship

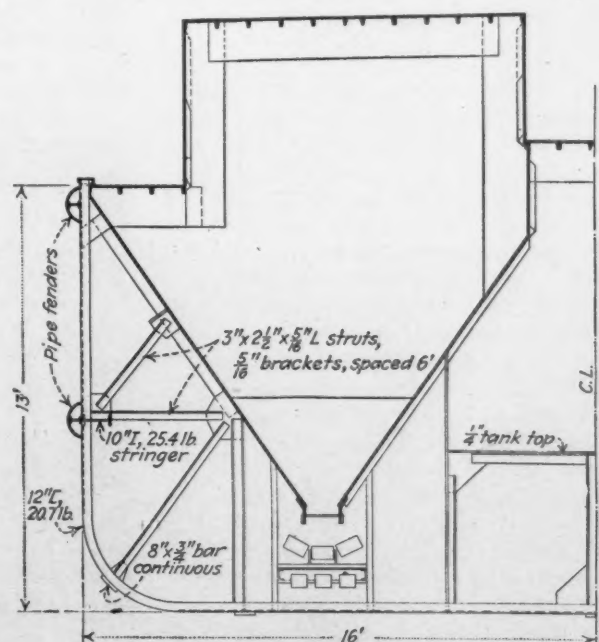
contracting company to build highways and he was largely responsible for the design of a new type of bulk cargo carrier, originally intended to handle his crushed stone, sand and gravel on the New York State barge canal and the Great Lakes. Out of the latter idea has come the Dolomite Marine

for his own firm, Dolomite Products Co.

A recent issue of *Engineering News-Record* describes both ships, the *Dolomite*, as follows: "It is of the self-unloading type; the belt conveyors will handle 300 to 400 tons of crushed stone per hour, while pumps (See column 1, next page)

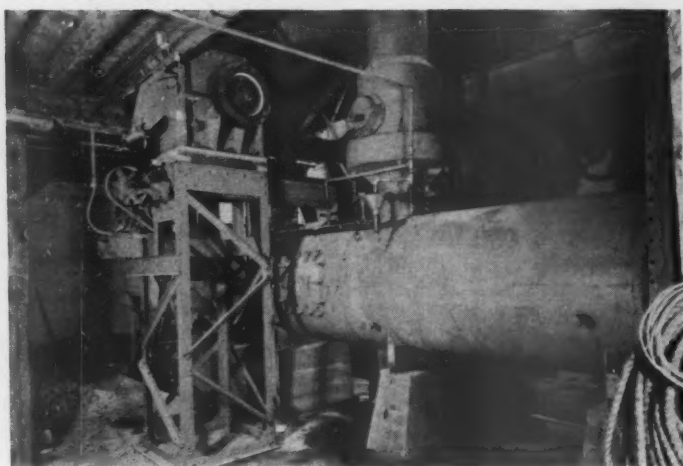


Reverse-Channel Hull



Transverse-Channel Hull

Sectional plan of Diesel ship "Dolomite"



Interior views of new lime plant of Purdy and Green, Ltd., St. John, N. B.

Two New Lime Hydrate Plants

One in Canada and One in Virginia

TO PROVIDE a greater variety of products to a lime trade of over 60 years' standing Purdy & Green, Ltd., St. John, N. B., Canada, have recently completed a new hydrate plant to serve customers in the maritime provinces and along the northeast Atlantic seaboard states in this country.

The plant is unusual in that it was built into a storage warehouse owned by the firm in the city of St. John, a mile and a half from the quarry and kilns. Neither kiln or hydrate plant is served by a railroad, the hydrate plant being about half way between the kiln and the nearest railroad loading point.

The entire hydrate unit is contained in a

Diesel Ship

(Concluded from page 55)

are installed that can unload 1,600 gal. of liquid per minute from the ship's tanks. The hull of the ship, instead of being constructed in the usual frame and shell design, is built of steel channels 12 in. by 20.7 lb. These channels are bent and shaped cold by a process patented by the ship manufacturer. After being bent to shape, the channels are placed in position and welded continuously, heel and toe, to adjoining channels. The designers estimate a saving of about 30% in the total dead weight of the ship over a comparable riveted design. The bow and deck are also constructed of 12-in. channels. The stern is plated.

"The ship is of the semi-submersible type, permitting increase in draft when entering the Barge Canal and thus facilitating its passage under low bridges."

Besides Mr. Odenbach, the ship's designers were John Cattinach, chief engineer and C. Wesley Werth, assistant engineer.

space 12 ft. wide by 35 ft. long by 32 ft. high. The hydrator, mill and separator rest on the ground floor of the warehouse, which has parts of the first and second floors removed to take care of the equipment.

The Kuntz hydrator, crusher, mill and separator and dust-collection system are used. The plant and equipment was designed, built and put into operation by Wm. J. Kuntz, president and general manager of the Lime & Hydrate Plant Co., York, Pa., under patents and license owned and controlled by this company.

Details of Plant

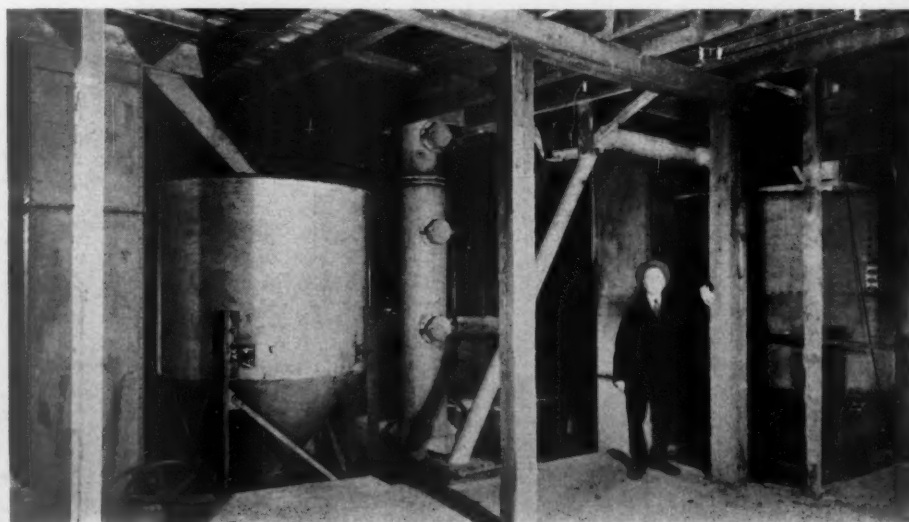
Lime is delivered either as run-of-kiln, or hand picked, according to the hydrate to be made (chemical, building, agricultural, spray). The crusher is an especially designed hammer type. From the crusher the lime is delivered by an elevator to a 5-ton bin over the feed spout of the hydrator and

connected to it by a special feeder for controlled feeding of the lime to the hydrator.

A continuous type hydrator is used, with a stack dust collector, or control. Water for hydration is introduced into the stack through a series of sprays at four different heights, which precipitate the dust and provides a warm milk of lime to the hydrator for slaking the crushed lime.

At the base of the dust control stack is a dam for this water, which provides a seal for the hydrator, the water overflowing to the interior. Auxiliary water may be added when needed. Observation openings (covered with removable caps) are provided so that the operation of the hydrator and dust control sprays may be controlled as desired. When in operation the condition of the lime in the hydrator may be observed in the "break down" zone, the "conditioning" zone and the "finishing" zone.

Just ahead of the conditioning zone ob-



Another view in the Purdy and Green lime plant

servation opening at the finish end of the hydrator is a dam to hold the lime back until properly conditioned. The hydrate flows over the top of this dam to the finish zone, from which it is discharged by gravity to an elevator, which delivers through a screw conveyor to the separator.

The separator is provided with adjustments to make the various grades of lime described, as may be required. Rejects from the separator go to a special beater mill which can be set to grind the character of product required, by means of an automatic throw-out adjustment. The rejects of the mill are returned to the hydrator and the cycle repeated.

Under the separator is a storage bin and Bates valve-bag packer.

The crusher and elevator form a separate unit with 10-hp. electric motor drive. The beater mill, feeder and hydrator form another unit powered by a 10-hp. motor. The hydrated lime elevator, screw conveyor and separator form another unit also powered by a 10-hp. motor, and the bagger by a 5-hp. motor. Each of the 10-hp. motors and the 5-hp. motor is operated by separate control switches and a single switch is provided to throw off all power if desired.

The plant has a rated capacity of 30 to 40 tons of hydrate per day.

D. J. Purdy is president, secretary and treasurer, and Charles Green, general manager, of the firm. The lime is high calcium and is sold under "P. & G." trademark.

Ripplemead Lime Co., Virginia

At Ripplemead, Va., the Ripplemead Lime Co. recently completed a hydrate plant very similar to the one just described, except that in this case the lime crusher is a No. 2 Allis-Chalmers "Pulverator" and a Sturtevant "Shirlwind" separator is used. In this case the water for the dust recovery stack is preheated in the hydrator by contact with the lime. The hydrator is fitted with an observable water feed from a direct supply besides an auxiliary supply when necessary.

The plant is unusual in that unlined wood tanks are used for storage of both quick lime and hydrate. The elevator casings are also wood, the cypress lumber and tanks



Lime floor of Ripplemead Lime Co. plant, Ripplemead, Va.

being secured from a nearby dismantled tannery.

The lime plant consists of four pot (mixed-feed) kilns using bituminous coal. They have a capacity of 24 to 30 tons per day. Three of the kilns are open top. The fourth is fitted with a hood and dampered stack designed by Wm. J. Kuntz to improve and control draft. All of the kilns will be so equipped.

Bernard Mason, former judge, Pearisburg, Va., is president, D. Webster Mason, secretary, and George E. Mason, the other partner, of the Ripplemead Lime Co., which was formerly the New River Lime Co., founded by the Masons' father 50 years ago.

A high calcium lime is made. The plant is served by the Norfolk & Western R. R.

New York State Crushed Stone Association Elects

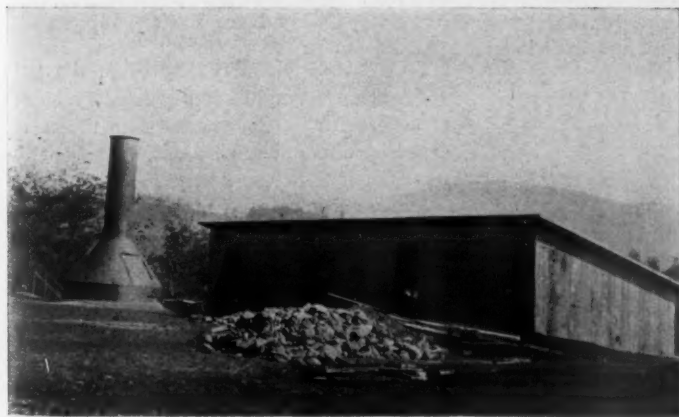
THE New York State Crushed Stone Association held its annual meeting at Syracuse, N. Y., January 12, and elected the following officers: President, J. E. Cushing, president, Cushing Stone Co., Schenectady, N. Y.; vice-president, Wilson P. Foss, Jr., chairman of the board of directors, New York Trap Rock Co., New York City; secretary and treasurer, George E. Schaefer, General Crushed Stone Co., Rochester, N. Y.

Lime Association President Opposes Tax on Paper Lime Bags

NORMAN G. HOUGH, president and general manager, National Lime Association, Washington, D. C., assisted by A. M. Tyree, North American Cement Corp., Baltimore, Md., and H. A. Huschke, agricultural director, National Lime Association, appeared at an AAA hearing in Washington January 25 in opposition to a proposed compensating processing tax on multiwall paper bags for shipping lime.

Under the agricultural adjustment act of last summer processors of agricultural products are compelled to collect from consumers and pay a Federal tax to provide farmers and planters with subsidies, or bribes, to reduce crop acreages. To prevent users of cotton bags from turning to paper bags, paper bags, where they come into competition with cotton bags are subject to a "compensating" tax.

The mission of Mr. Hough and his associates in appearing for the lime industry was to convince AAA officials that cotton bags are never used for shipping lime, and why. The testimony was of necessity of an elementary nature, explaining what lime and hydrated lime are, why a water-tight or water-resistant bag is required, etc. The testimony was accompanied by demonstrations which should have been convincing.



Left: Partial plant view of Ripplemead Lime Co. Right: Quarry property is at rear of Ripplemead plant property shown here



Hints and Helps for Superintendents

Sand Drainer Belt

THE SAND which is settled in a settling tank, with either hand or automatic control, is a little too wet to handle comfortably on a conveyor belt or to load into a truck before it has drained in a bin or pile. At one of the plants of the Consolidated Rock Products Co., Los Angeles, Calif., a device has been installed which drains such sand to where it can be easily handled. It is a horizontal conveyor belt, but instead of being troughed by the usual idlers it is given a ridge in the center by a wheel which has a rounded edge. The sand falls on this ridge. The slope is not enough to permit the sand to run off but enough so that the water leaks out of the sand and goes over the edge of the belt.

This is shown in the accompanying drawings. It was impossible to take a photograph of the belt except where it was discharging into the chute. The lumpy appearance of the sand in the chute is evidence that it was well drained. Harry Jumper, the engineer of the company, invented the device.



Product discharged from specially designed draining belt

Timing Rotation of Detonation with Cordeau

L. B. Reifsneider

Formerly Superintendent Production of Raw Materials, Cumberland Portland Cement Co., Cowan, Tenn.

AN UNUSUAL TECHNIQUE in the use of Cordeau has developed possibilities in rotation of detonation which is of considerable interest to quarry superintendents and users of Cordeau generally. It is based upon the dependability of the speed of detonation of Cordeau and has been used very successfully in several large shots.

In the first shot observed the rugged formation of the mountainside above the quarry had made impossible a desired spacing of well-drilled holes and after a main line of 24 holes had been drilled it was

judged necessary to drill 11 relief holes on a ledge from 5 to 8 ft. lower and in front of the main line and extending about half its length.

The holes were in a heavy ledge limestone formation with numerous crevices and old watercourses, filled with clay, as much as 17 ft. and running at any angle with the face. In many cases these cutters were concealed or covered by overlying ledges.

The charge of explosives was calculated for 9 ft. of stemming on the last charge of explosives in the main holes and it may be readily seen that conditions were ideal to cause a lot of missed holes if the relief holes were detonated before the charge in the main holes and displaced the upper ledges.

The inequality of the terrain made zigzag Cordeau connection of front and back holes hazardous on account of the acute angles

incurred. After careful study it was decided to use two Cordeau trunk lines leaving the one to the relief holes 60 ft. shorter at the firing end than that to the main holes and explode the trunk lines simultaneously.

On firing the advance of 60 ft., roughly 1/300 of a second, was not noticeable, but it allowed time for the detonating wave in the trunk line over the main holes to reach the explosives before the explosion of the relief holes had had time to cause any displacement. There was no audible nor visible time lapse between the two explosions, although the fragmentation and spread showed the separate detonation when the material was worked out with the shovel.

In firing two No. 6 E. B. caps carefully calibrated through the lead line were exploded by a 50-hole blasting machine.

The same method has been used in various other shots under similar conditions and careful calculation has permitted use of differentiation as low as 15 ft. between trunk lines. There are times when the method may be advantageously used in preference to a cross lead for two or more trunk lines.

It is only fair to state that the technical department of at least one of the large manufacturers of explosives says the method is impracticable, and that it cannot be done. The "proof of the pudding is in the eating," however, and the method has been used very successfully a number of times.

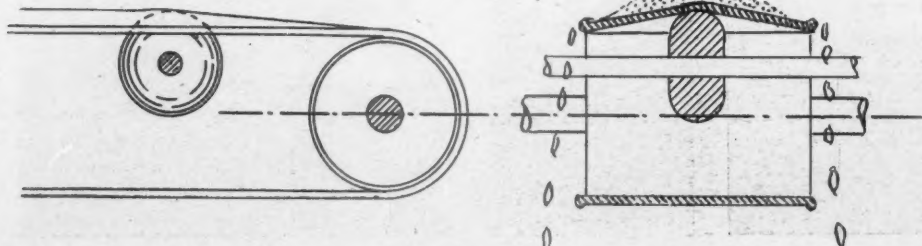
Lack of familiarity with the qualities of Cordeau, has militated against its more frequent use in other than the yearly or semi-yearly blasts to which its use is limited in most quarries. Its more frequent utilization in smaller blasting operations would lead to considerable economies.

Preventing Wear on Tail Block

By Dare Paris
Monrovia, Calif.

IT IS SURPRISING how often the tail block on a dragline is neglected by being allowed to lie on the ground with the cable dragging dirt and small stone, causing it to wear out long before its time.

In the accompanying illustration is shown a tail block which has been in service for two years and still in good shape. The base is built of four 12-in. I-beams welded together and mounted on two 12-in.x12-in. timbers. The line on the deadman is tied in the center of the I-beam on the back. Note pipe rollers placed in front of the sheave to hold the cable in place. This reduces a great amount of wear on the sides



Sand-drainer belt

of the sheave and cable. Two set screws are placed in the hub to hold sheave to the shaft. The bearings are bolted to the I-beam. This I find is better than when the sheave is left to turn on the shaft. This hook-up will out-wear several blocks which are left lying on the ground.

Hazardous Air Receiver Installation

THE COMPRESSED AIR receiver installation shown in the illustration is defective in the opinion of the editor who took the picture. There is a very remote possibility that such an installation *might* explode, even though it is provided with a suitable drain cock at its lowest part and also is provided with a safety valve. Can any of our readers tell why?

* * *

The installation is defective in that it does not make easily possible a free flow of air throughout the entire receiver. The air from the compressor enters at the *top* of the receiver and leaves at the *top*. Thus the receiver acts as a pocket and might permit the accumulation of heavy explosive gases in its lower portions. By altering the position

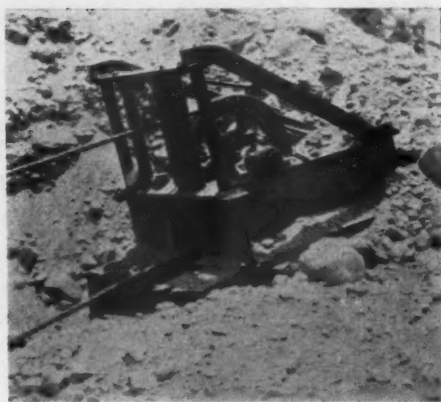


Receiver installation

of the intake and outlet air pipes the receiver could be "air swept," thus making it impossible to accumulate any explosive mixtures. No matter whether the reader agrees with this theory or not, the facts are that this installation is almost a duplicate of one that did explode in a Southern city and with the loss of several lives. Several theories have been advanced as the reason for compressor receiver explosions. All these theories fall back on explosive mixtures due to vaporization of oil used for lubricating compressor cylinders. But if these explosive mixtures are removed as fast as formed (by "air sweeping" the receiver) there can be no explosion as there are no explosive mixtures to explode. However, if pockets are allowed to exist in the air systems where dead gases can accumulate there could be an explosion . . . Don't take chances or theorize but install your air receiver so nothing is overlooked and thus play safe!

Derrick Mounting

VERY OFTEN it is quite convenient to have a hand derrick which is simple in operation and cheap to install. The corner of an old bin makes an ideal support for a



Tail block protection

boom which can be raised or lowered and which can find a multitude of uses in unloading and loading heavy objects. All that is necessary to install such a boom is a strong piece of timber of suitable length, two or more sheave blocks, some wire cable and a base-swivel to hold the boom. All the articles, except the latter, can usually be found on the scrap pile.

Scrap Pieces Used

At one western operation even the latter article; the base-swivel was resurrected from the scrap pile. A coupling assembly, used for coupling a truck and trailer was called into use to serve as the swivel. The base plate was bolted to the corner of the bin, and after welding a socket to receive the boom-timber (consisting of a piece of pipe) to the connecting link, the whole was mounted as shown and made a very admirable derrick boom for small loads.



Improvised support

Cutter Edge for Power Loader Buckets

By Melvin C. Dow
Engineering Department, New York Trap Rock Co., Newburgh, N. Y.

A SIMPLE scheme we have used to cut the wear on the buckets of a power loader. As you know, digging trap rock from 2½ in. size down is a tough job for a loader without teeth on the buckets. When made of ordinary steel, these teeth soon wear down so that they become ineffective. For one of our truck loaders which has 20-in. buckets we had some teeth cast of ¾-in. thick manganese steel, and instead of one set of



Reversible bucket teeth on a single casting

teeth, we have a double row so that when one side becomes worn out they can be reversed. These double teeth shown on the enclosed photos for a 22-in. bucket weigh 71 lb. each. A single row tooth would weigh 6.4 lb. Or in other words, for an increase of 10% in the cost we get an increase of 100% in the wear.

Wild Shots

A MPLE protection for machinery, withdrawal of workmen to safe cover, and the halting of motor traffic in the immediate vicinity during quarry blasting operations are recommendations of an explosives engineer who reports on the unusual hazards of wild shots in *Du Pont Magazine*. Usually, wild shots, which cannot be calculated in advance, do no particular damage, but occasionally, he says, "according to the law of inherent cussedness of inanimate matter, a missile goes straight for the crusher, pump or other valuable equipment."

Limestone and dolomite seem to be the most frequently reported sources of wild breaks and shots, although a weak spot may be present in almost any kind of rock. The fault generally is well marked by the exterior formation. A hidden weakness, extending back horizontally or at an angle to the explosive charge creates a condition somewhat like the bore of a cannon with a charge of powder and projectile.

The hazard of a wild shot was indicated at an eastern quarry some time ago when a drill hole only 16 ft. deep was loaded with 12 lb. of dynamite. The blast laid down the rock within 70 ft. of the face with exception of one 75-lb. fragment that was shot 700 ft. away.

TRAFFIC and TRANSPORTATION

Proposed Rate Changes

THE FOLLOWING are the latest proposed changes in freight rates up to and including the week of January 27:

Trunk Line

31796. Cancel commodity rate of 69c per net ton on sand and gravel, C. L., from Wanaque-Midvale, N. J., Erskine and Ringwood, N. J., to Jersey City, N. J. Sixth class rate to apply. Reason: Investigation develops no traffic has moved for some time nor is there prospects for future shipments, therefore rate is obsolete.

31797. Slate, crushed, ground and dust, C. L., minimum weight 40,000 lb., except on slate, dust, which is 50,000 lb., from Lenhartsville, Pa., to Genasco, N. J., 12½c per 100 lb. (Present rate 14c per 100 lb.) Reason: Proposed rate is comparable with rates to Maurer, Newark, Perth Amboy, N. J., etc.

31817. Crushed stone, coated with oil, tar or asphaltum, C. L., (See Note 2), from Wertz, Pa., to Punxsutawney, Pa., \$1.23 per net ton. (Present rate \$1.35 per net ton.) Reason: Proposed rate is comparable with rate from Tyrone Forge, Pa.

31827. To amend C. R. R. of N. J. I. C. C. G-3981, I. C. C. G-3883, Rdg. Co., I. C. C. 1257, and P. R. R. I. C. C. 1032, by revising descriptions on sand and gravel to read as follows:

Note A—Rates apply only on *sand and/or gravel (other than blast, engine, filter, fire, foundry, glass, moulding, quarts, silix or silica), carloads, when loaded in open top equipment.

Note B—Rates apply only on *sand and/or gravel (blast, engine, filter, fire, foundry, glass, moulding, quartz, silix or silica), carloads, when loaded in open top equipment.

Note C—Rates apply only on *sand and/or gravel, when loaded in box cars or other closed equipment.

*Rates will not apply on sand processed beyond washing or screening for decolorizing, filtering or water softening.

Reason: To clarify present tariff description for application of rates on sand and gravel.

31828. Lime, agricultural and/or building, in mixed C. L. with plaster, plaster articles or plasterboard, from Akron, Oakfield, Wheatville, Clarence Centre and Transit, N. Y., to destinations in C. F. A. and Trunk Line territories named in Agent Curlett's Tariff I. C. C. A-306, as specified in items listed below:

To amend Items 5375A, 5405B, 5455B, 5460A, 5468B, 5480C, 5485A, 5490B, 5495B, 5500B, 5505C, 5507A, 5508A, 7685, 7690C and 7695D, to the extent that rates named therein applying on plaster will also apply on lime, agricultural and/or building, when in mixed C. L. with any or all of articles named in items, the quantity of lime not to exceed 25 per cent of the minimum weight on plaster.

Also to amend all items except 5375A, 5405D, 5508A and 7685, by adding new note or to amend present notes contained therein, covering mixed C. L. privileges, as follows:

Building lime and/or agricultural lime, and/or plaster and articles taking same rates and/or plasterboard will be charged at actual weight and at the applicable rate for each of the respective commodities subject to the minimum weight of 40,000 lb. for each mixed C. L. deficit in the minimum weight, if any, to be paid for at the rate applicable on plaster.

31842. Crushed stone, gravel and sand, other than blast, engine, fire, foundry, glass, moulding or silica, C. L., from Columbia, N. J., Hainesburg Jct., N. J., Mt. Bethel, Pa., and Portland, Pa., to the following stations on the Reading Company:

(Rates in c. per net ton.)

	Proposed Rates
Kutztown, Pa.	110
Blandon, Pa.	120
Fleetwood, Pa.	120
Evansville, Pa.	130

Reason: Proposed rates are comparable with rates on like commodities for like distances, services and conditions.

31849. Ground limestone, C. L., minimum weight 50,000 lb., from Texas and Cockeysville, Md., to Washington, D. C., 6c per 100

lb. (Present rate 9½c per 100 lb.) Reason: Proposed rate is comparable with rate from Martinsburg, W. Va.

31637. Crushed stone, coated with oil, tar or asphaltum, C. L., from White Haven, Pa., to Mill Hall, Pa., \$1.90 per net ton.

31876. Stone, natural (other than bituminous asphalt rock), crushed, uncoated and coated with oil, tar or asphaltum, C. L., (see note), from Oriskany Falls, N. Y., to Marcellus, N. Y., \$1.40 per net ton, coated stone 10c higher. Reason: Proposed rate is comparable with rates on like commodities for like distances, services and conditions.

Note—The oil, tar and/or asphaltum not to exceed 10 per cent by weight of the commodity as shipped, the shipper to so certify on shipping orders and bills of lading.

31887. To cancel present rate of \$2.60 per net ton on phosphate rock, in bulk, from Kentmere, Del., to Wilmington, Del., to Catasauqua, Pa. Classification basis to apply. Reason—Investigation develops no traffic has moved for some time, nor is there prospects for future shipments, therefore rate is obsolete.

Sup. 1 to 31842. Crushed stone, gravel and sand, other than blast, engine, fire, foundry, glass, moulding or silica, C. L., from White Haven, Pa., to Kutztown, Pa., \$1.20, Blandon, Fleetwood, Pa., \$1.30, and Evansville, Pa., \$1.20 per net ton.

31845. To establish on agricultural limestone, unburned, in bulk, and agricultural limestone screenings, in bulk, in open top cars, C. L., from Carey, O., to Lisbon and Negley, O., rate of 135c per net ton. Present, 170c per net ton.

31922. Sand, in open top cars, C. L. (B) Sand, building, C. L., and (C) sand, viz., blast, engine, moulding, ground flint, quartz and silix, in straight or mixed C. L. (see Note 2) from Mt. Eagle, Pa., Brumbaugh, Tatesville, Burnham, Pa., and Mapleton district, Pa., to destinations on the B. & O. R. R.—Adrian Mines, Brockway, Hamilton, Johnsonburg, Punxsutawney, Yatesboro, DuBois, Rossiter, McIntyre, Pa.

(A) Rates ranging from \$1.50 to \$2.20. (B) Rates ranging from \$2.05 to \$2.75 and (C) rates ranging from \$1.80 to \$3.06 per net ton.

It is also proposed to cancel present commodity rates from Cumberland, Md., to Reynoldsville to Walston, Pa., incl., account no traffic moving. Class rates to apply. Reason: To adjust rates and place them on proper basis.

Central

38235. To establish on sand, C. L., from Kern, Ind., to Champaign and Urbana, Ill., rate of 50c per net ton. Present, 70c per net ton.

38241. To amend agency and/or individual lines' tariffs publishing rates on sand and gravel, C. L., from Joliet, Ill., to points in Indiana, by providing that such rates will apply only on sand, other than blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica and gravel.

38468. To establish on stone, broken or crushed, C. L., but not less than 72,000 lb., from Erie, Pa.

To	Proposed	* Present
Mill Village, Pa.	100c N. T.	13c cwt.
Union City, Pa.	100c N. T.	10c cwt.
Columbus, Pa.	100c N. T.	12c cwt.
Bear Lake, Pa.	100c N. T.	12c cwt.

*Sixth class per C. F. A. L. Tariff 489.

38469. To establish on sand (except blast, core, engine, filter, fire or furnace, foundry glass, grinding or polishing, loam, moulding or silica), and gravel, C. L., (See Note 3), from Oil City, Pa., to Grove City, Pa., rate of 90c per N. T. Present rate—12c cwt. (sixth class), per Official Classification, per C. F. A. L. Tariff 489.

38470. To revise rate on sand (other than blast, engine, foundry, glass, moulding or silica), C. L., but not less than 72,000 lb., from Erie, Pa., to Du Bois, Pa., rate of 140c

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

per N. T. Route—Via Butler Transfer, Pa., and B. & O. R. R. Present—160c per N. T.

38475. To establish on slag, commercial, crushed (a product of iron and steel blast or open hearth furnaces), C. L., in open top equipment (See Note 2), from Steubenville, O., to Bowerston, O., rate of 60c per N. T. Route—Via P. R. R. direct. Present—80c per N. T.

38482. To establish on crushed limestone, C. L., from Bedford-Bloomington, Ind., district to Ottawa, Ill., rate of 190c per N. T. (Proposed rate to be restricted so as to apply via C. I. & L. Ry., Lafayette, Ind.—Wab. Ry.—Streator, Ill.—C. B. & Q. R. R. or via C. I. & L. Ry.—Shelby, Ind. N. Y. C. R. R.—Streator, Ill., C. B. & Q. R. R.—Present—220c per N. T.

38507. To establish on sand, lake, C. L., from Muskegon, Mich., to Ann Arbor, Battle Creek, Jackson, Kalamazoo, Milan and Ypsilanti, Mich., rate of 101c per net ton. Routes: To Battle Creek via G. T. Ry. direct; to Ann Arbor via G. T. Ry.—Durand—A. A. R. R. or G. T. Ry.—Owosso, M. C. R. R.; to Jackson via G. T. Ry.—Owosso—M. C. R. R.; to Ypsilanti via G. T. Ry.—Owosso—M. C. R. R.; to Kalamazoo via G. T. Ry.—Grand Rapids—P. R. R. or N. Y. C. Ry.; to Milan via G. T. Ry.—Durand—A. A. R. R. Present, 126c per net ton.

38524. To establish on crushed stone, in open top cars, C. L., from Thrifton, O., to Buffalo, O., rate of 125c per net ton. Present rate, 325c per net ton.

38525. To establish on crushed stone and crushed stone screenings, C. L., from Delphos, O., to Union City, Ind., rate of 95c per ton. Route: Via N. Y. C. & St. L. R. R., Ohio City, O., C. N. R. R., Ansonia, O., and C. C. & St. L. Ry. Present, 13c (sixth class).

38534. To establish on sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica) and gravel, in open top cars, C. L., (See Note 2), except when car is loaded to full cubical or visible capacity actual weight will apply, from Painesville, O. (Rates in cts. per ton of 2,000 lb., except as noted):

To	Proposed	* Present
Ashtabula, O.	60	10c cwt.
Cleveland, O.	60	10c cwt.
Geneva, O.	50	10c cwt.
Madison, O.	40	9c cwt.
Mentor, O.	40	9c cwt.
Saybrook, O.	50	10c cwt.
Unionville, O.	40	9c cwt.
Wickliffe, O.	40	9c cwt.
Willoughby, O.	40	9c cwt.

*Sixth class.

38398. To establish on crushed stone, C. L., from Thrifton, O. Rates in cents per net ton:

To	Present	Proposed
Conev Island, O.	(1) 115	95
Mt. Washington, O.	(1) 115	95
Forestville, O.	(1) 115	100
Summerside, O.	(1) 115	100
Amelia, O.	(1) 115	100
Hamlet, O.	(1) 115	100
Bethel, O.	(1) 115	105
Hamersville, O.	(1) 115	105
Georgetown, O.	(1) 115	115
Russellville, O.	115	115

(1) Russellville, O., rate under intermediate rule.

Route—B. & O. R. R., Loveland, O., P. R. B., Carrel Street, C. G. R. R.

38399. To establish on agricultural limestone, unburnt, crushed stone, crushed stone screenings, in bulk in open top cars, C. L., from Centerville, O., to Muncie, Ind., rate of 110c per N. T. Present—300c per N. T. (sixth class).

38563. To establish on sand, blast, core, engine, fire, foundry, glass, loam, moulding or silica, C. L., (See Note 3), from Dunbar, Pa. Rates in c per net ton.

To	Prop.	Pres.
Cheswick, Pa.	135	*162
Burgettstown, Pa.	153	*160

*Per P. R. R. Tariff I. C. C. 244.

†Per P. R. R. Tariff G. O., I. C. C. 13888. Route: Via P. R. R. direct.

38564. To establish on stone, crushed and stone screenings, C. L., in open top equipment, from Ashtabula, O.

	(*)	(†)
Rock Creek, O.	40	9
East Orwell, O.	50	10
Bristolville, O.	60	12
Champion, O.	60	12
Warren, O.	80	12
Niles, O.	85	12
Youngstown, O.	90	13

*Proposed, in c per net ton.

†Present, sixth class basis.

Route: Via P. R. R. direct.

38595. To establish on stone, crushed (in bulk), and crushed stone screenings (in bulk), in open top cars, C. L., from Holland, O., to Ark Shade, O., rate of 70c per N. T. Present—80c per N. T.

38566. To establish on stone, rip rap, rubble and quarry scrap, in straight or mixed carloads, from Harvest Hill, O.

To	Proposed	*Present
Buffalo, N. Y.	290c N. T.	25c Cwt.
Chicago, Ill.	315c N. T.	25c Cwt.
Columbus, O.	151c N. T.	12c Cwt.
Dayton, O.	176c N. T.	16c Cwt.
Fort Wayne, Ind.	239c N. T.	20c Cwt.
Grand Rapids, Mich.	315c N. T.	25c Cwt.
Huntington, W. Va.	176c N. T.	18c Cwt.
Lansing, Mich.	302c N. T.	23c Cwt.
Oil City, Pa.	277c N. T.	23c Cwt.
Portsmouth, O.	139c N. T.	16c Cwt.
Richmond, Ind.	189c N. T.	18c Cwt.
Sandusky, O.	202c N. T.	18c Cwt.
Toledo, O.	214c N. T.	19c Cwt.
Wheeling, W. Va.	189c N. T.	17c Cwt.

*Sixth class.

38585. To establish on sand (except blast), core, engine, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica), and gravel, C. L., from Oil City, Pa., to Conneaut Lake, Pa., rate of 90c per N. T. Present—12c (sixth class).

38587. To establish on sand (except blast, core engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica), and gravel, in open top cars, C. L., from Cleveland, O., to Erie, Pa., rate of 105c per N. T. Present—175c per N. T.

38613. To establish on sand (except blast, core, engine, filter fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica), and gravel, in box cars, from Toledo, O. Rates in c per net ton:

To	Prop.	*Pres.
Au Train, Mich.	325	460
Champion, Mich.	345	480
Houghton, Mich.	365	520
Keweenaw Bay, Mich.	365	520
L'Anse, Mich.	360	520
Lake Gogebic, Mich.	370	520
Marquette, Mich.	330	460
Nestora, Mich.	350	480
Newberry, Mich.	310	420
North Ironwood, Mich.	375	520
Paynesville, Mich.	370	520
Sault Ste. Marie, Mich.	315	400
Seney, Mich.	315	420
Shingleton, Mich.	315	420
Sidnaw, Mich.	360	480

*Class E.

Southwestern

2604. Sand, silica, from Guion, Ark., to Jackson, Miss. To establish a rate of 270c per ton of 2,000 lb. on sand, silica, C. L., (See Note 2), except that actual weight will govern when the car used is loaded to full visible capacity, from Guion, Ark., to Jackson, Miss. (Present rate 309c.)

2641. Asphalt rock, from Ardmore, Okla., to St. Louis, Mo. To establish a rate of 360c per ton of 2,000 lb. on asphalt rock, natural, crude or crushed, C. L., (See Note 3), from Ardmore, Okla., to St. Louis, Mo. Publication to be made in S. W. L. Tariff 15-O and St. L.-S. F. Tariff 4250-A to be canceled on effective date of rate here proposed.

2673. Phosphate rock, from Phosmico, Fla., to points in the southwest. To establish rates on phosphate rock, crude and ground, C. L., from Phosmico, Fla., to points in the southwest shown in Agent Speiden's Louisiana Tariff No. I. C. C. 1354, and S. W. L. Tariff No. 45S, I. C. C. 2458, the same as applicable from Bartow, Fla.

2697. Rock gypsum, from Belvidere, Kling, Medicine Lodge and Sun City, Kan., to Dewey, Okla. To establish a rate of 7½c per 100 lb. on gypsum rock, C. L., minimum weight marked capacity of car, except when car is loaded to full visible space carrying capacity, actual weight but not less than 50,000 lb. will govern, from Belvidere, Kling, Medicine Lodge and Sun City, Kan., to Dewey, Okla. Present rate, 8½c. See Item 2070, page 222, S. W. L. Tariff 44-F.

2721. Silica sand, from Everton, Ark., to Jackson, Miss. To establish a rate of \$2.70 per ton of 2,000 lb. on silica sand, C. L., in box cars, minimum weight 90 per cent of marked capacity of car except that actual weight will govern when car is loaded to full visible capacity, from Everton, Ark., to Jackson, Miss. (Present rate \$3.25.)

2737. Sand and gravel, from Van Buren, Ark., to Sallisaw and Ashby, Okla. To establish on sand and gravel as described in Item 10-B, minimum weight, as per Item 15-A, S. W. L. Tariff No. 162-F, from Van Buren, Ark., a rate of 50c per ton of 2,000 lb. to Sallisaw, Okla., and 55c to Ashby, Okla. Present rate 62 and 68c, respectively.

Southern

3732. Phosphate rock, crude or ground or pulverized, not acidulated nor ammoniated, C. L., New Orleans and Port Chalmette, La., to Hattiesburg, Laurel, Meridian, Newton and Jackson, Miss. Present rates—Twelfth class. Proposed reduced rates on phosphate rock, crude or ground or pulverized, not acidulated nor ammoniated, in packages or in bulk, C. L., minimum weight 40,000 lb., from New Orleans and Port Chalmette, La., to Hattiesburg, Miss., 124; Laurel, Meridian, Newton and Jackson, Miss., 170c per net ton (not applicable from shipside). (Applicable only on coastwise traffic; does not include handling or wharfage charges.)

3784. Stone, crushed, C. L., Knoxville, Tenn., to Kingsport, Tenn. Present rate, \$1.25 per net ton. Proposed rate on crushed stone, C. L., (See Note 3), from Knoxville, Tenn., to Kingsport, Tenn., \$1.15 per net ton.

3996. Stone, crushed or rubble, C. L., Boxley, Va., to Fort Monroe, Phoebus, Hampton, Newport News, Morrison, Oyster Point, Oriana, Reservoir, and Lee Hall, Va. It is proposed to establish reduced rate on stone, crushed or rubble, C. L., minimum weight 90 per cent of marked capacity of car, except when car is loaded to full visible capacity, actual weight will govern, from and to above named points, 126c per 100 lb.

4027. Ground phosphate rock, C. L., Florida mines to Ocean Springs, Miss. Cancellation. It is proposed to cancel, on the obsolete theory, the present rates on ground phosphate rock, C. L., from and to above named points, published in A. C. L. R. R. I. C. C. B2750, and S. A. L. Ry. I. C. C. A. 7658. Rate of 462c per ton 2,240 lb. (Gulfport, Miss., rate applicable under intermediate note) to apply after cancellation.

Western

7283-3. Gravel, C. L., (See Note 3), than 90 per cent of marked capacity of car the actual weight will be the minimum weight. In no case shall the minimum weight be less than 40,000 lb., from Pacific, Jeddburg and Valley Park, Mo., to Alton, Ill. Rates: Present—Class or combination rate. Proposed—106c per ton of 2,000 lb.

7270-F. Rates, stone, viz., rip rap, C. L., (See Note 3), but not less than 40,000 lb., from Dell Rapids and Sioux Falls, S. D., to Blair, Neb., and Missouri Valley, Ia. Rates, present, class rate, no commodity rate being provided, to Blair, Neb.; to Missouri Valley, Ia., Omaha rate of \$1.70 per ton will apply under intermediate clause. Proposed, \$1.25 per net ton.

3230. Stone, crushed or ground; chatts (lead or zinc mine refuse); rip rap; stone, rubble; strippings (stone), sand, gravel; strippings (sand or gravel pit), C. L.; minimum weight 90 per cent of marked capacity of car, except when loaded to full visible capacity actual weight, but not less than 40,000 lb. will apply, between White Bear, Mo., and stations in Iowa. Rates: Present—As shown in Item 2997-C, Sup. 172 to W. T. L. Tariff No. 50-N. For example, the rate from White Bear to Ottumwa, Ia., under this item is \$2.20 per net ton. Proposed—Alternative distance rates shown in Item 7805-F of Sup. 172 to W. T. L. Tariff No. 50-N. Under this item the rate from White Bear, Mo., to Ottumwa, Ia., would be \$1.60 per net ton.

7270-G. Stone, crushed; stone, rip rap; stone, rubble (rough broken irregular pieces, not matched or tooled). (See Note 3), from Dell Rapids and Sioux Falls, S. D., toavenport, Ia. Rates, present, 240c per net ton. Proposed, 220c per net ton.

8232-2. Sand and gravel, C. L., (See Note 2), but not less than 60,000 lb., from Anson, Wis., to Saginaw and Detroit, Mich. Rates, present, lowest available combination. Proposed, to Saginaw, Mich., \$3.23 per ton of 2,000 lb.; to Detroit, Mich., \$3.49 per ton of 2,000 lb.

8719. Stone, crushed, C. L., (See Note 2), but not less than 40,000 lb. from Dubuque, Ia., to Cassville, Wis. Rates: Present—100c per net ton. Proposed—80c per net ton.

Texas-Louisiana

9217-TX. Sand and gravel, straight or mixed C. L., from Laban Spur, San Antonio and Schertz, Tex., to Gonzales, Tex.: Proposition from carriers to establish rate 70c per ton of 2,000 lb. Switching charges of connecting lines will be in addition to the proposed rates. The rates suggested to assist contractors in bidding on a constructor job at Gonzales, Tex., where contract has been

let to build a bridge over the Guadalupe River.

9223-TX. Crushed stone (broken stone, ranging in size up to 200 lb. weight), C. L., from Riceland to Midlothian, Wyatts and Venus, Tex.: Proposition from carriers to establish rate 75c per net ton on crushed stone, C. L., standard minimum weight, from Riceland to Midlothian, Wyatt and Venus via S. P. Lines direct, also via S. P. and G. C. & S. F. Ry. Rate necessary to secure movement via rail. Contract has been let for paving highway paralleling Santa Fe from Midlothian for about 9 miles through Wyatt and Venus, and unless proposed rate is established the movement will be via truck.

7966-3-TX. Sand and gravel, C. L., from Hobbs Spur to points in Texas other than Belton, Tex.: Proposition from carriers to apply Belton, Tex., rates from Hobbs Spur, Tex., on C. L. movements of sand and gravel to other points in Texas except Belton, Tex. The gravel pit at Hobbs Spur finds it difficult to compete with other pits in Texas where they are given benefit of mileage less than the distance from the actual location of the pit.

9234-1-TX. Rates on sand and gravel, C. L., from Smithville and West Point to Lockhart, Tex.: Proposition from shippers to establish rate of 50c per ton of 2,000 lb. on sand and gravel, C. L., minimum weight 90 per cent of marked capacity of car used except where actual weight of car loaded to full space capacity is less than 90 per cent of marked capacity such actual weight shall govern, from Smithville and West Point to Lockhart, Tex. The proposed rate is for the purpose of moving sand and gravel to be used in road and construction work in and around Lockhart, Tex., and unless the proposed rate is established a new pit will be developed and the material trucked.

I. C. C. Decisions

23416. Molding sand. Crane Enamelware Co. vs. B. and O. Railroad, et al. By division 3. New York to Chattanooga, Tenn., rate modified. Limited reparation awarded.

3877. Lime and Plaster. By division 3. Proposed cancellation of combination rule application in connection with commodity rates on lime and plaster, C.L., between Western trunk-line territory found justified.

3876. Cement. By division 3. Proposed cancellation of rule for constructing combination rates on cement, C.L., from eastern trunk-line territory to points in western trunk-line territory and in Utah and Wyoming, found justified.

14460. Asphalt rock and limestone. By division 2. Relief granted under fourth section supplement to enable railroads to make rates without observing the long-and-short-haul provision on chatts, gravel and sand coated with not to exceed 10 per cent of oil tar or asphalt.

15212. Cement. 4th Section. By division 2. Authority granted, conditionally, to establish and maintain cement rates, C.L. basis, from Chanute, Kan. and Kansas City, Mo., and points east of it and from Superior, Neb., to New Mexico points without observing the long-and-short-haul provision.

25597. Sand. By division 3. Hungerford and Terry, Inc., vs. Pennsylvania railroad. Rate on processed sand for water filtering and softening in box carloads from Sewell, N. J., to the New York Lighterage for export, found inapplicable prior to August 25, 1931. Reparation awarded.

23823 and 17006. Plaster board. By the commission. Readjustment of rates, minimum weights and the rule governing mixed carloads of plaster and plaster board in the western district ordered not later than March 15. Base rate of 10c per 10 miles graduated up to 49c at 1,500 miles as prescribed (Gypsum Association and Upson Co., applicants).

New Machinery and Equipment

Shovel-Fed Trucks

THE COMPANY in charge of operations at San Gabriel Dam No. 1 at San Gabriel Canyon, 55 miles northeast of Los Angeles, is employing what it believes to be the largest dump trucks ever utilized. Their huge bath-tub bodies have a capacity of 16 cu. yd.

This company has capitalized on the experience of the construction engineers at Boulder Dam (See *Rock Products*, January 10, 1934, Page 72), who found after prolonged experimentation in truck hauling that maximum economy depended on moving as large loads as possible each trip. One of the unusual features of the new truck type is a device which permits the driver to leave his compartment and stand to the left of his seat on an extended platform equipped with auxiliary controls. The dump bodies are so high and wide that the driver could not possibly ascertain his proper maneuvers from the customary position. Hence this "crow's nest" has proved helpful in preventing accidents and in speeding up truck operations, according to engineers of the Mack Company, who developed the idea.

This is the type of truck, provided with a 6-in. diameter rear axle and 40 by 14 dual solid tires presenting altogether a width of 4½ ft. of rubber tread to the ground, which is helping to literally move a mountain of stone required in the engineering program developed by engineers on the San Gabriel project. It is estimated that more than 12,000,000 cu. yd. of rock must be moved. Some of it will have to be trucked twice and some three times.



Only five dipperfuls of rock from this shovel being used on the San Gabriel dam project are required to fill the 16-yd. capacity truck

Stream-bed and entire channel area on this project are sand and gravel in which are imbedded myriads of granite boulders varying in size from that of a baseball to 10 ft. in diameter. It is necessary that all of this loose material within the limits of the dam-site be excavated and removed by trucks so that the fill also will rest on bed rock. After abutments have been made ready and the river bed scraped to barren rock, the mountain, before mentioned, will begin to move. Officially known as the quarry, this mountain will furnish most of the rock for the fill.

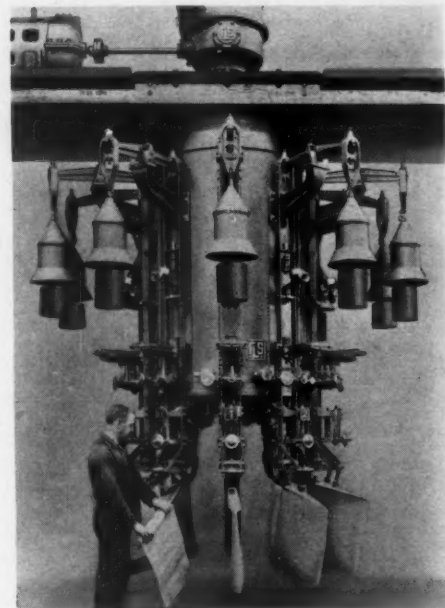
Engineers believe that the three phases of the San Gabriel projects constitute among other things the world's largest motor trucking job. In brief the object is to create a reservoir capable of retaining spring freshets draining from an area of 203 sq. mi. into the hitherto unruly San Gabriel river. It involves "picking up a mountain and setting it across a wide canyon." When completed the rock filled dam will be 310 ft. high above stream-bed, 1670 ft. long at the crest, 900 ft. thick at the stream-bed and 30 ft. at the crest.

Automatic Weighing and Packing Unit

DEVELOPED to automatically weigh and pack cement, ground lime and phosphate, soda ash, etc., into valve bags, the Fluxo bag packer has been developed for heavy duty use by F. L. Smidth & Co., New York, N. Y. The unit illustrated here comprises a supply tank of cylindrical design which carries the necessary filling spout, weighing mechanism, etc. As the tank ro-

tates, the flow of product to the bags is effected. In a continuous operation the product is weighed exactly, packed and discharged.

The machine is as nearly 100% automatic as engineering ingenuity can make it. The operator merely slips each bag on the spout



Rotary weigher and packer

as the cylinder rotates. Capacity of the machine depends on the number of spouts employed, and this number is at the option of the purchaser. The company says that a packer unit with 12 spouts will handle approximately 1600 bags of portland cement per hour.

Panels for Circuit Breakers

SELF-SUPPORTING steel panels for mounting small oil circuit breakers for isolated industrial installations have been brought out by General Electric Co. This equipment is suitable for use on ungrounded systems up to 2500 volts. The panel unit consists of a flanged steel plate to which supporting feet are welded. In addition to the breaker and its operating lever, accessory apparatus—transformers, relays, etc., are mounted on the panel.

Bag Closure

PAPER-LINED cloth bags, in the opinion of some operators, offer saving in weight and material cost for shipping. One objection to their use, however, has been the sewing or wire tying of the ends. A new closure recently has been developed by the Bemis Bros. Bag Co., to overcome this diffi-

culty. A cemented strip is applied by machine over the open end of the bag and the company declares that this makes the closure water-proof and sift-proof.

Combination Scraper

A SLACKLINE scraper excavator, combining features of a drag scraper and a slackline cableway, is the latest development announced by Sauerman Bros., Inc. The new machine is a flexible unit capable of excavating and conveying materials at a very low cost per cubic yard, says the company. Its economy of operation is equally in evidence whether it is called upon to move materials from a bank, from a shallow deposit, or from an under-water pit, according to the company engineers.

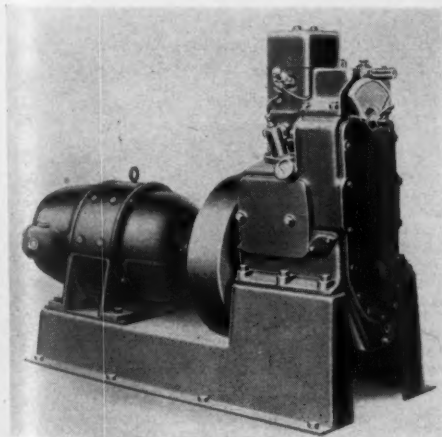
The bucket furnished with the machine is the "Crescent" scraper, attached to a carrier which rides on a track cable. The method of operation resembles that of the standard drag scraper as far as digging and conveying is concerned, but in the dumping operation the bucket is lifted into the air by tightening the track cable and the force of gravity is utilized to carry the empty bucket back to the digging point. This speeds up the operating cycle and results in a larger hourly handling capacity than is attainable with an ordinary scraper.

The larger sizes of these scraper excavators have handling capacities ranging from 200 to 500 cu. yd. per hour and operating spans up to 1000 ft. in length. Smaller units have been designed for shorter spans.

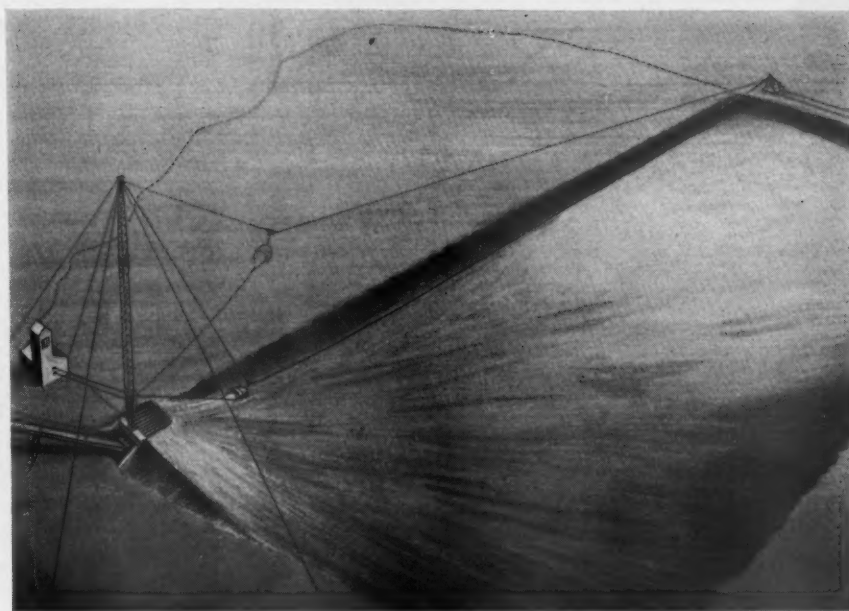
For taking material from a flat deposit or pit the machine usually is furnished with a steel mast and the scraper bucket is swung around in radial lines of operation. For digging from long banks or for stripping overburden the machine may be equipped with a self-propelling head tower and a small movable tail tower.

Four-cycle Engine

DESIGNED for both marine and mobile equipment, as well as for stationary service, a new light-weight, four-cycle Diesel engine has been placed on the market by Fairbanks-Morse Co. The unit is avail-



Auxiliary Diesel units



Sketch of new slackline scraper excavator

able in brake horsepower capacity of from 10 to 60, and of from 1 to 6 cylinders. Cylinder size is $4\frac{1}{4}$ in. by 6 in. and the normal operating speed, 1200 r.p.m.; displacement is 85 cu. in. per cylinder and 5370 cu. in. per min. per hp. at rated speed.

Rock Handling

IN FIVE, ten or 20-ton capacity, new and improved rock handling apparatus designated as the "Rock Grab" has been developed by the Bucyrus-Erie Co. The manu-



Improved rock handling unit

facturers claim that the new device renders obsolete the customary dog and chain or sling methods on many rock handling operations.

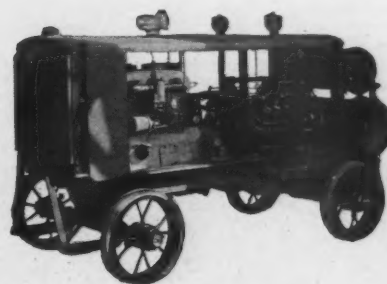
Using this device, rock may be tipped or

rolled, it is said, or it may be picked up even when surrounded by other pieces. Rock loads also can be discharged exactly where wanted in position without re-setting, users say, and without the customary shifting or jacking. Releasing the closing line immediately frees the lifted object by "remote control."

Portable Compressors

PRODUCED in sizes ranging up to 360 cu. ft., portable compressor units of improved design are offered by the Curtis Pneumatic Machinery Co. The Model C compressors are equipped with Timken roller bearings and "carbon-free" valves.

Large capacity for size and weight, con-



Compressor model

servative operating speeds, and modern valves eliminating need for frequent valve cleaning, are among features stressed by the manufacturer.

"Suction and discharge valves for each cylinder," says the company, "are in self-contained cages which can be removed even while the compressor is hot, and replaced in a few moments' time." Easy starting even in cold weather, compressor coupling arranged to allow disconnection by removing four bolts, are further claims.



THE INDUSTRY

New Incorporations

Heumader Quarries, Inc., St. Joseph, Mo. Chartered by Wm. Heumader and R. S. Tracie.

Trux-Mix Concrete Co., Dallas, Tex. Capital stock, \$6,000. Building construction and repairs. Incorporators are P. W. Gifford, L. L. Dent and W. B. Palmer.

Illinois Minerals Co., Cairo, Ill. 250 shares par value common. Incorporators: A. M. Davis, Ethel Davis, and J. E. Clutts. To deal in silica, gravel, clay, oil, gas and all other minerals.

Michigan Talc Mining Co., Detroit, Mich., has been incorporated to mine, quarry and deal in mineral products with a capital stock of \$150,000, \$77,350 of which has been subscribed and paid in.

Sneider-Frawley, Inc., Lancaster, Wis. Operate machines and equipment for crushing rock and stone, etc. 100 shares no par value. William Sneider, Paul E. Frawley, and J. Sneider are the incorporators.

Pacific Rock and Gravel Co., Los Angeles, Los Angeles County, Calif. Capital stock, 11,000 shares, no stock subscribed. Directors: T. B. Peters, Monrovia, Frank L. Moore, Alhambra, and W. H. McCune, Jr., of Monrovia.

Asheville Quarry Co., Asheville, N. C. To quarry and crush stone and manufacture or mix other road, construction and building materials. Authorized capital stock, \$10,000; subscribed stock, \$300. Incorporators are F. J. Fanning, Katherine C. Fanning and A. H. Bizzell.

Woolery Stone Co., Inc., Bloomington, Ind. Capital stock 1,000 shares no par value. Incorporating to quarry limestone and manufacture limestone products. Incorporators are Charles C. Woolery, Mrs. Ella L. Woolery, Ralph Woolery, Robert Woolery, Mrs. Marie W. Rogers, Mrs. Ruth W. Bybee, May Woolery, Dr. Homer Woolery, Lynn R. Binkley and William M. Loudon.

Personals

Walter S. Keith, formerly representative of the Cowell Lime and Cement Co., has announced his candidacy for port commissioner in Seattle, Wash.

J. I. Foules of the Missouri Portland Cement Co., Memphis, Tenn., recently was elected second vice-president of the Builders' Exchange of Memphis for the 1934 term.

Louis B. Bray, formerly in charge of city sales, has been named assistant general manager of plant and sales for the Dubuque Stone Products Co., Eagle Point, Dubuque, Ia.

C. S. McArdle has been appointed sales manager of the Universal Atlas Cement Co. Kansas City office to succeed S. H. MacArthur. Mr. McArdle joined the Atlas organization in 1927.

Paul Nauman, general manager of the Dubuque Stone Products Co., Dubuque, Ia., has been elected president of the Dubuque Traveling and Business Men's Association. At present he is serving as CWA administrator in Dubuque County.

C. R. MacCarey, traffic manager of the Hercules Cement Corp., Philadelphia, Penn., recently was elected general chairman of the board of the Eastern Shippers' Conference on Railroad Consolidation which met January 4 in New York City.

W. J. Brown, Chattanooga, Tenn., has been elected vice-president of the Dixie Sand and Gravel Corp., according to the announcement of Blaine S. Smith, president of this company and also of the Pennsylvania Dixie Cement Corp., parent concern.

Victor J. Azbe, well known consulting engineer of St. Louis, Mo., recently spent a month in the Idaho mountain country stalking big game. His exploits recently were the subject of a feature article in the Sunday magazine of the *Globe Democrat*.

H. H. Baker, Sugarcreek, Ohio, has been appointed receiver by the common pleas court at Dover for the limestone business of Grant Dolvin of New Cumberland and J. O.

Strawn, operating near Sherrodsville. Mr. Dolvin has brought this action in order to secure an accounting of the partnership business conducted by him and by Mr. Strawn.

Obituaries

Joseph McNeerney, 76, retired contractor and quarry operator of Carthage, Mo., died January 4.

William Bancroft Potter, 70, engineer of the General Electric Co., died at his home January 15.

Joseph S. Oechsle, consulting engineer of the Worthington Pump and Machinery Corp., died in Philadelphia on December 24. He was 39.

John J. Manning, 60, president of Manning and Locklin Sand and Gravel Co., Detroit, Mich., died January 14.

Thomas A. McLoughlin, official of the General Electric Co., Schenectady, N. Y., died January 8 at the age of 70.

Clarke F. Leh, 40, superintendent of the Three Forks Portland Cement Company plant at Trident, Mont., died recently.

William Dun Armstrong, 44, superintendent of the Ekshaw plant of the Canada Cement Co., Ltd., died recently at Calgary, Alta.

Robt. A. Bautz, head of the non-metallic mineral company in Chicago bearing his name, died December 13. The business will be discontinued.

Joseph S. Boggs, 55, president of the Kentucky Concrete Pipe Co., Richmond, Ky., died December 20 at his home in Frankfort after a brief illness.

James L. Freeman, 77, died recently at his home in Reading, Penn. For many years he conducted a lime and fluxing stone business in connection with other varied projects which he undertook from time to time.

Harold R. Sanson, 57, president of the Southern Cement Co., a resident of Birmingham, Ala., more than thirty years, died December 30. The deceased was a native of East Orange, N. J., and a graduate of Stevens Institute of Technology.

Joseph G. Mayer, 53, president of the Nickel Plate Sand and Gravel Co., died on Christmas day at his home near Erie, Penn. He was known locally for his varied business connections including that of banking and his activity as a civic leader.

John Corwin Vance, 78, who organized and became president of the Hermitage Portland Cement Co., died at his home in Chattanooga, Tenn., on December 17. Mr. Vance also was president of the John C. Vance Iron and Steel Co., one of the South's leading manufacturing companies. For many years he was prominent in the organization of many business enterprises, including the recently formed Tennessee Oil & Gas Corp.

Willoughby Elwood Snyder, 58, well-known as industrial chemist in the cement industry, died at his home in Allentown, Penn., December 14. His death came while announcement of his "high-early strength" cement company, of which he was slated to be president, was still pending. His activity in the cement field began when he started as a sample boy for the Atlas Portland Cement Co. Later on he held positions as chief chemist in several eastern cement plants.

Cement

Lawrence Portland Cement Co., Northampton, Penn., resumed operations January 8.

Lone Star Cement Co. held a sales promotional meeting of its organization in Dallas early in January.

Columbia Cement division of the Pittsburgh Plate Glass Co., East Fultonham, Ohio, called 350 men back to work January 15.

Marcem Quarries, subsidiary of the Penn.-Dixie Cement Corp., Kingsport, Tenn., resumed operations in January after an 18-month shut-down.

Signal Mountain Portland Cement Co., Chattanooga, Tenn., anticipates reopening some time in February, according to President John L. Senior.

Colorado Portland Cement Co. in its suit against J. Fred Roberts and Sons Construction Co., Denver, Colo., has been awarded approximately \$20,000 in past due accounts.

Florida Portland Cement Co., Tampa, Fla., and the Pennsylvania-Dixie Portland Cement Corp. plants at Clinchfield, Ga., and Des Moines, Iowa, report completion of 1933 schedules without a single lost-time accident.

Allentown Portland Cement Co., following a conference with city officials of Reading, Penn., at which financial arrangements were discussed, announced that it would transfer approximately 60 acres of its property to the city.

Sand and Gravel

Sand and gravel and Caliche pits have been opened near Abernathy, Tex.

Pioneer Gravel Co., Seattle, Wash., has opened the pit near Miles City.

Maxfield and Carlton have opened a gravel pit two miles west of Walnut, Ill.

M. A. Hanna Co. has reopened the Hia-watha gravel pit near Iron River, Mich.

Smiley Sand and Gravel Co., Atlanta, Ga., has begun dredging and towing operations.

Bristol Sand and Gravel Co., Bristol, Penn., filed an involuntary petition of bankruptcy May 25 in Philadelphia.

Grand Rapids Gravel Co., Grand Rapids, Mich., is operating a night and day shift to fill a new highway contract.

Larimer and Shaffer, Inc., Cedar Rapids, Ia., are named in a receivership action involving total claims of \$47,000.

Twenty-five CWA workmen began January 15 to develop a gravel quarry in the southwest corner of Poweshiek county, Ia.

Smith and Pfaff Sand and Gravel Co., Gallopolis, O., has resumed operation on dredging and towing over the Ohio and Kanawha rivers.

American Sand and Gravel Co., St. Louis, Mo., is involved in the petition for removal of L. J. Stiers and H. W. Mueller as its receivers.

Provo Sand and Gravel Co., Salt Lake City, Utah, with a pledge of \$10,000, was among the first signers in the local modernization campaign.

Waverly Gravel and Tile Co., Shell Rock, Ia., reports shipments of 65,000 tons of concrete sand during 1933, an increase over its volume in 1932.

Hearn Sand and Gravel Co., Fredericksburg, Tex., has constructed a 150 ft. railroad spur on a new tract of land lying along the Pedernales River.

South Bend Sand and Gravel Co., South Bend, Ind., is co-operating with the local safety council to prevent deaths in swimming pools on its property.

Murdock MacDonald, CWA worker, was injured recently in a blasting operation for sand and gravel recovery in Highland Center township near Devils Lake, N. D.

Gravel and reddog products, to be used on all secondary road projects in Marshall county, W. Va., were recommended recently in a court order issued at Wheeling.

Homer Smith, 32, CWA worker at Mansfield, Ohio, was killed January 18 when five tons of earth and gravel fell on top of him as he was working at the bottom of a gravel pit.

Gravel producers at Dallas, Tex., have received an order for 5,500 yd. of gravel at prices averaging 14½¢ per yd. F. O. B. pit. The product will be used in connection with CWA work.

Rock Island Sand and Gravel Co., Rock Island, Ill., reports reelection of officers at its recent annual meeting. Robert A. Wagner is president, Miss Lillie Huber is vice-president and Gustav Tegeler is secretary-treasurer.

Montgomery Gravel Co., Montgomery, Ala., recently filed application to reduce its capital stock from \$200,000 to \$2,000. The 2,000 shares of stock with a par value of \$100 each were decreased to 20 shares of \$100 par value.

Mississippi River Sand and Gravel Co.'s fleet of steamboats, barges and derrick-boats docked early in January at Vicksburg, Miss., which will be the base of extensive operations. The company will cooperate with the Dutton Sand and Gravel Co., also operating expensive floating equipment out of Vicksburg.

Pacific Coast Aggregates, Inc., San Francisco, Calif., has reopened its Coyote plant.

River Sand Transportation Co., Ltd., Montreal, Que., has conditioned the sandsucker Aragon for operation on the Great Lakes.

Red Wing, Minn. A new engine and boiler has been purchased for the Belmont gravel pit operated by the board of public works.

Quarries

City rock crushing equipment is in operation at Princeton, Mo.

Braymer, Mo., city officials have purchased rock crushing equipment.

Lyon county, Kan., now has three rock crushing units in operation.

The quarry recently opened near Plattsmouth, Neb., is employing 45 workmen.

New rock crushing equipment has been purchased by the City of Odessa, Mo.

A Civilian Conservation Corps unit began quarrying rock recently near Kendallville, Ia.

A new stone quarry has been opened near Mt. Pleasant, Ia., in connection with CWA work.

A rock crusher has been in operation near Knoxville, Ia., in connection with a CWA project.

Whitman quarry, Mt. Vernon, Ia., is distributing its product for local highway projects.

Washington County supervisors have purchased a 40-acre tract of Iowa land for permanent quarry operation.

Commissioners of Noble County, Ohio, have opened five stone quarries. Labor is being paid for out of CWA funds.

A quarry near Mineral Wells, Tex., has been the source of much stone recently delivered to nearby CWA projects.

Southern Crushed Stone and Granite Co., Parkhill, S. C., has resumed operations. It is shipping jetty stones to Florida.

CWA workers at the quarry in Vigus, Mo., are producing crushed stone said to be delivered on the job at a cost of only 55c a ton for the county.

Dickinson and Rose, operators of a rock crushing plant at Mandeville, Mo., report approval of the state geologist on their product for highway work.

Three towns, Henderson, Macedonia and Carson, Ia., have cooperated in the purchase of rock crushing equipment to be used in connection with CWA work.

Five stone crushing plants working two daily shifts and furnishing employment to about 286 men recently have been placed in operation near McConnelsville, Ohio.

Cedar Valley quarry near Tipton, Ia., was the scene of a severe accident recently when a workman, Ferral Lodge, employed on a CWA project, was injured by falling rock.

Tennessee Valley Authority officials, in order to establish their own rock crushing and screening plant at Norris Dam have bought equipment costing a total of nearly \$80,000.

A granite quarry at Blair Station, Fairfield County, S. C., it was announced in January, will be scheduled for regular operation through the month of February, employing about 100 men.

Holston Quarry Co., of Tennessee, has been credited by the Bureau of Internal Revenue with a tax refund of \$1,760.85, according to the announcement made in Washington, D. C., January 24.

Part of the Barker quarry has been leased to supervisors of Jefferson County, Ia., who will operate in connection with CWA relief projects. The commissioners recently purchased a second rock crusher costing \$2,800.

Rock crushing equipment being used in connection with CWA projects recently was granted a low current rate upon an emergency application to the Kansas City Power and Light Co. for operation near Higginsville, Mo.

Robert Van Pelt, acting for a group of citizens in Weeping Water, Neb., has applied to PWA representatives in Lincoln, Neb., for a loan and grant of \$450,000 for development of a rock quarry and crushing plant in the vicinity of Weeping Water. Through it they hope to employ regularly between 300 and 400 men.

Nehawka Quarries, Nehawka, Nebr., have resumed full capacity operation.

Fowler Lime Rock Quarries, Wheatland, Wyo., has been sold to Tony and Manuel Simas.

A quarry has been opened near Gallipolis, Ohio, to supply material for the new municipal airport.

Rainbow Granite Co. quarry near Mellen, Wis., has been sold to the Cold Springs (Minn.) Granite Co.

J. F. Tilley, Marion, Va., who has acquired a rock crusher plant here, will spend \$12,000 for modernization.

Rockport Granite Co., Rockport, Mass., reports that the structure housing its power plant recently was totally destroyed by fire.

Municipal quarry, Riverside, Calif., will be modernized to the extent of \$25,000, according to a plan submitted to the city council.

James Homan, workman at the rock crushing plant near Mt. Moriah, Mo., recently suffered a broken leg and other injuries.

Cerulean Stone Co., Inc., Cerulean, Ky., has added 30 to 40 more men under its operation on NRA schedules, and added \$300 to \$400 a month to its payroll.

Crab Orchard Stone Co., near Crossville, Tenn., recently operating at capacity, now has around 400,000 sq. ft. of rock quarried and ready for processing or shipment.

Carl Myer, Montpelier, Ia., has opened a new stone quarry a half mile west of here. The output will be used for repairing river dams between Keokuk and Rock Island.

Baker-Wilson Stone Co., Carrollton, Mo., has been dissolved through the purchase of his partner's share by Roy Baker. Mr. Baker also has taken over the quarry leases.

County board of supervisors of Sumner, Ia., has started condemnation proceedings involving a small acreage northwest of Waverly, for the purpose of establishing a stone quarry. The board already has purchased a rock crusher.

Trap Rock Co., two miles south of Saint Croix Falls, Wis., has added a three-story structure to its crushing plant to take care of the installation of two new crushers and other equipment. The entire plant is being modernized and new storage bins provided for.

County commissioners with headquarters at Belle Plaine, Ia., now are renting three rock crushers paying for them at the rate of 35c per yard to operator-owners. The *Belle Plaine Gazette* says, "Forced by current scarcity of machinery to contract for the purchase of a \$5,220 rock crushing outfit, the county supervisors and engineer explained that the equipment will be set up at the Miller quarry southeast of Vinton."

Lime

Georgia Limerock Co., Perry, Ga., reopened its plant early in January.

Three limestone projects are being operated in Walworth County, Wis., in connection with local CWA projects.

Inland Lime and Stone Co., Portland Inland, Mich., subsidiary of the Inland Steel Co., is one of the Upper Peninsula exhibitors at the Century of Progress exposition in Chicago.

Edward F. Schworm, Beach City, Ohio, has installed a continuous draw kiln type plant for the manufacture of burned agricultural lime.

Interstate Amiesite Co., Wilmington, Del., is erecting a plant for producing rock surfacing materials at Salona near the Bellefonte Lime Co.'s stone quarries.

Superior Lime and Hydrate Co., Pelham, Ala., has added 20 new men to its force and has every pound of capacity contracted for in advance, according to officials of the company.

Round Rock White Lime Co., Round Rock, and the Austin White Lime Co., McNeil, Tex., report material increases in business recently.

Gypsum

United States Gypsum Co., has been preparing to take over additional plant facilities at North Tonaawanda, N. Y.

Gypsum, Lime and Alabastine Co., Ltd., New Westminster, B. C., reports the re-opening of its plaster and gypsum board de-

partments and the operation of its New Westminster and Calgary gypsum quarries.

National Gypsum Co. has purchased the Macoustical Engineering Co., Cleveland, Ohio.

Cement Products

Medford Concrete Co., Medford, N. J., is employing a force of 21 men steadily to produce concrete pipe for improvement projects under way in half a dozen near-by communities. Orders now in hand will require steady operation for at least six weeks.

Cement Products Bureau of the Portland Cement Association was represented before a large regional meeting of concrete products producers held at the Nicollet hotel, Minneapolis, Minn., in January by W. G. Kaiser, manager of the bureau.

C. Oscar Brown, Collingswood, N. J., was elected subregional director of the concrete masonry code authority at a January meeting of the Concrete Products Manufacturers' Association of eastern Pennsylvania, New Jersey, Delaware and Maryland.

Concrete contractors at Great Falls, Mont., co-operated in the recent completion of one of the largest outdoor concrete swimming pools in the northwest. The pool is 204 x 150 ft. and varies from 3 to 9 ft. in depth. Nearly 1,000,000 gal. of water were required to fill it.

F. B. Koelle, Philadelphia architect recently told a group of concrete products manufacturers meeting there that in his opinion the small home in the future would be of more or less standardized pattern and that concrete would probably be the principal material used.

Miscellaneous

Rifle, Colo.—A large deposit of natural asphaltum has been found 15 miles west of here. It is mixed with oil and sand in proportion similar to that found in Texas deposits. The local group will develop the project.

Ione, Calif.—A. J. Hamilton and N. C. Amen have begun the development of a talc mine north of here.

Pedro Woolley, Wash.—The Skagit Talc Co. has ordered several thousand dollars' worth of new machinery in order to modernize its plant for an increased demand for its products such as talc furnace blocks.

Cheyenne, Wyo.—The American Colloid Co. and the Wyodak Co., concrete plants, are running two shifts under NRA schedules.

Birmingham, Ala.—Alabama Barytes Co. has been testing deposits in Bibb county with a view of developing a strip mine.

Manufacturers

Caterpillar Tractor Co., Peoria, Ill., announces its four cylinder, No. 28 tractor to succeed the model No. 25.

Bodinson Machinery Co. gives notice of the removal of its plant and offices from 200 Paul Ave., to 4401 San Bruno Ave., San Francisco, Calif.

Jeffrey Manufacturing Co., Columbus, Ohio, has opened branch offices in the Carew Tower Building, Cincinnati, and the Rockefeller Building, Cleveland, Ohio.

Acheson Oildag Co., Port Huron, Mich., reports that on January 1 it made an increase of 5 per cent in salaries and wages of all employees.

Manitowoc Engineering Works, Manitowoc, Wis., reports shipment in January of three Vanderwerp heat recuperators and two Minogue agitators to three different companies.

Falk Corp., Milwaukee, Wis., announces the licensing of J. D. Christian Engineers to manufacture Rite-Lo-Speed motors under the original Christian design. The corporation now owns U. S. patent No. 1,860,703 originally issued to J. D. Christian.

W. W. Sly Mfg. Co., Cleveland, Ohio, announces observance this year of its 60th anniversary. The company was founded in 1874 by W. W. Sly and has steadily increased its production of dust collecting equipment, tumbling mills and blast cleaning equipment.

General Refractories Co., Philadelphia, Penn., reports election of S. M. D. Clapper, formerly chairman of the board, as president to succeed John R. Sproul, who re-

cently resigned. Mr. Sproul now is assistant to the president.

SKF Industries, Inc., announces removal of general and executive offices from New York, N. Y., to Front and Erie Ave., Philadelphia, Pa.

Foster D. Snell, Inc., has moved to 305 Washington St., Brooklyn, N. Y., where larger quarters have been provided for both offices and laboratories.

Patterson Foundry and Machine Co., East Liverpool, O., announces the appointment of R. C. Denny as chief engineer of its stoker division; M. E. Yeager, Boston, Mass., as stoker sales manager for New England; and the Skeldon Engineering Co., Toledo, O., as district representatives on stokers, ash conveyors, etc.

Poole Foundry and Machine Co., Baltimore, Md., announces the appointment of Mr. Frank M. Young, Milwaukee, Wis., as their representative there and in that vicinity for their flexible coupling as well as the appointment of the J-B Engineering Sales Co., New Haven, Conn., as their representative for the entire state of Connecticut.

Diamond Iron Works, Inc., Minneapolis, Minn., has named Kellogg and Tree, New York, N. Y., exclusive sales agent in the New England states, New York and New Jersey to handle the line of complete equipment for sand and gravel pits, including crushing and washing machines and a portable crushing and screening plant. Crushers for road building, a road surfacer attachment for oil, asphalt and tar heaters for general utility purposes also are included in the company's line.

Trade Literature

Cleveland Tractor Co., Cleveland, O., announces the appointment of C. B. Crockett as sales engineer.

Controls. Revised price sheet A-51 with information on time switch and cut-off units. **MERCROID CORP.**, Chicago, Ill.

Heating Equipment. Continued regenerative counterflow air preheater described in Bulletin No. 933. **SUPERHEATER CO.**, New York, N. Y.

Jacks. Development of mud-jack for raising curb and gutter, sidewalk and street slab explained. **NATIONAL EQUIPMENT CORP.**, Milwaukee, Wis.

Gas Engines. Bulletin S-550-S5 brings up-to-date information on gas engines from 180 to 360 hp. **WORTHINGTON PUMP AND MACHINERY CORP.**, Harrison, N. J.

Cement Spray. Fifty pages of illustrated matter show results of cement applied by "Cement-Gun" action. Strength and wearing data given. **CEMENT GUN COMPANY**, Allentown, Penn.

Welding. Illustrated booklet describes uses of oxy-acetylene welding and cutting units for reclamation of worn or broken machine parts. **LINDE AIR PRODUCTS CO.**, New York, N. Y.

Gas Engines. Two hundred and fifteen pound engine designed for light industrial service fully described. Rating up to 16 horsepower capacity. **WISCONSIN MOTOR CORP.**, Milwaukee, Wis.

Vibrating Equipment. Bulletins 579, 581, 582 and 583 describe in detail and illustrate vibrating screens, conveyors, feeders and coolers-dryers. **JEFFREY MANUFACTURING CO.**, Columbus, Ohio.

Valves. Eight-page pamphlet with color diagram describes and shows applications of improved lubricated plug valves. Specification tables. **AMERICAN CAR AND FOUNDRY CO.**, New York, N. Y.

Crusher. Bulletin 1469-C gives complete information on the Style B Newhouse gyratory crusher designed for large capacity and high reduction. **ALLIS-CHALMERS MANUFACTURING CO.**, Milwaukee, Wis.

Furnaces. Drill steel heating unit diagrammed and described in eight-page pamphlet. Oil burning equipment. Supplementary statement on magnetic indicator. **SULLIVAN MACHINERY CO.**, Chicago, Ill.

Tractors. Forty-eight page catalogue treats tractor and tractor engine design technically with illustrations showing the smallest details of construction, as a supplement to text matter. **CATERPILLER TRACTOR CO.**, Peoria, Ill.

Welding. Sixteen page booklet, well illustrated, includes reference to various welding applications in their relation to salvaging worn and broken machine parts, etc.

AMERICAN MANGANESE STEEL CO., Chicago Heights, Ill.

Grinding. Eight page illustrated loose-leaf bulletin describes screen mill apparatus and gives typical screen mill application including those in the lime and gypsum fields. **RAYMOND BROS. IMPACT PULVERIZER CO.**, Chicago, Ill.

Tractors. Thorough presentation of the wheel type tractor with incidental reference to "U" power shovel loading rock from quarry. "Wheeled Power" Feature of the Month. **ALLIS-CHALMERS MANUFACTURING CO.**, Milwaukee, Wis.

Hoists. Industrial applications of hoists illustrated with diagrams explaining construction and operation. Specifications listed and reference given to electrical accessories. Bulletin No. RH-1. **HARNISCHFEGGER CORP.**, Milwaukee, Wis.

Screen Mills. Eight-page loose leaf folder illustrates screen pulverizer application on lime and gypsum and many other products. Pulverizer data and specifications, also blueprints shown. **RAYMOND BROS. IMPACT PULVERIZER CO.**, Chicago, Ill.

Screws. Engineering data on hollow set and socket head cap screws showing holding power and recommended sizes of set screws, also recommended tightening force for cap screws. Tabular and chart data. **ALLEN MANUFACTURING CO.**, Hartford, Conn.

Welding. Profusely illustrated 96-page booklet shows a multitude of industrial applications of hard-surfacing alloys to lengthen equipment life. Special seven-page section devoted to hard surfacing repair work in cement plants. **HAYNES STELLITE CO.**, Kokomo, Ind.

Conveyors. Pneumatic air conveying equipment detailed with diagrams and installation pictures in 12-page loose-leaf assembly. Special reference to the filter type of pneumatic conveying equipment for lime, kaolin, gypsum, Fullers earth, etc. **FULLER CO.**, Catasauqua, Penn.

General. New 64-page illustrated catalog and engineering data book (No. 1240) devoted to equipment for the mechanical handling, screening, sizing, washing, dewatering and preparation of sand, gravel, stone and other non-metallic minerals. **LINK-BELT COMPANY**, Chicago, Ill.

Gears. Approximately 10,000 different sizes, kinds and types of gears listed in new 302 page catalog of machine moulded gear equipment. Size range of units described are from 3 in. diam. to 15 ft. weighing from 5 lb. to 70,000 lb. **POOLE FOUNDRY AND MACHINE CO.**, Baltimore, Md.

Tires. Booklet includes table for use as a changeover guide for operators of 1½ ton trucks. Payload given in pounds, tire size, rim size and dual spacing in inches for 131 and 157 inch wheel base. Application of single tires, proper dual spacing, etc., outlined. **B. F. GOODRICH CO.**, Akron, Ohio.

Separators. Modern air separator performance examined from standpoint of extra capacity uniform fineness, cleaner tailings, etc., as compared with performance of older units. Special data given on slate dust, hydrated lime and cement clinker operations in 4-page circular. **RAYMOND BROS. IMPACT PULVERIZER CO.**, Chicago, Ill.

Mounted Equipment. Profusely illustrated booklet describes complete line of equipment for general service on road making, earth handling, rock crushing and highway maintenance equipment. Special section on crawler tractors, crushing and washing plants, shovels, cranes, etc. **AUSTIN-WESTERN ROAD MACHINERY CO.**, Chicago, Ill.

Capacitors. Bulletin 710 is entitled "Ideal Capacitors for Power Factor Correction." Contains brief explanation of how capacitor acts to correct low power factor. Tables given for determining correct size of units required for low power factor condition correction in various plants. **IDEAL ELECTRIC AND MANUFACTURING CO.**, Mansfield, Ohio.

Bearings. Twenty-four page loose leaf booklet covers the complete specifications, dimensions, load ratings and other data for units manufactured in the pillow block design of the expansion and non-expansion type, self-aligning as well as rigid-type mounting, hanger boxes, unit mountings, flanged mountings, etc. **THE MEDART CO.**, St. Louis, Mo.

Bearings. Two hundred and sixty-six page loose-leaf book of general information on bearings, similar to previous editions except that new load ratings are included relative to the fatigue life of bearings. Statistical presentation of standard, tapered bore, steep angle, keyway cone, flanged cup and other

types of bearings. Material thumb indexed. **TIMKEN ROLLER BEARING CO.**, Canton, Ohio.

Replace Emergency Rates

(Additional Traffic News on Pages 60-61.)

ABOLISHING the system of granting special rates on short notice for the railroad transportation of building materials, such as crushed stone, sand and gravel, in order to meet truck competition, the Kansas rate commission has put into effect a general reduction of more than 20% on railborne aggregate traffic.

Homer Hoch, chairman of the commission, reports that on hauls up to 25 miles the reduction is approximately 25%; on those of 25 to 50 miles, 23%; with the average reduction on 10-mile blocks between 50 and 100 miles in excess of 15%. The new rate also affects shipments in the maximum zone of 230 miles.

"The system of special rates," says Mr. Hoch, "has not only been unsatisfactory to shippers, contractors and others directly concerned but also objectionable as a matter of public policy."

Same Problem in Nebraska

Reduction in Nebraska sand and gravel and crushed stone rates were made effective in a blanket order first adopted November 1, 1933, setting up a uniform reduction for 76 individual cases in which requests had been filed by railroads to enable them to meet truck competition. The state rate commission now is split on the question of whether it is advisable to continue the blanket order or to pass individually upon each request for reduced rates.

To permit establishment of reduced rates on sand, gravel and crushed stone to meet truck competition, the Illinois Central Railroad Co. has petitioned the Interstate Commerce Commission for modification of a 1932 order. Specifically it requests reconsideration as to the rate of 65 cents a ton prescribed from Merom, Ind., to Robinson, Ill. Since the report was issued the company states there has been a marked increase in the movement of aggregate by truck.

A railroad rate reduction of 50% on gravel was approved in January by the Mississippi railroad commission at the request of railroads seeking to meet motor truck competition. The new rates apply from Columbus to Macon, Brooksville, Shuqulak and other points.

Reparation Recommended

INVOLVING alleged overcharges of from 4 to 13c per 100 lb. of cement, the case of the Signal Mountain Portland Cement Co., Chattanooga, Tenn., against the Alabama, Great Southern and other railroads was disposed of recently when Examiner T. Leo Haden of the Interstate Commerce Commission recommended payment of reparations to the cement firm.

Cement shipments on which the company claimed it was overcharged were billed from Chattanooga to Florida destinations.

IT PAYS TO KEEP MACHINERY IN PROPER REPAIR

- The tendency in dull times is to economize by omitting necessary repairs to machinery.

- But even a depression might not justify risking ruination of machinery representing a large investment, for want of a few inexpensive replacement parts.

- Not only is there the danger of injury to the machine, but a breakdown, when it occurs, usually comes when the machine's capacity is most required.

**Idle periods are an opportune time to overhaul;
busy periods require the machines to be kept up.**

- AND REMEMBER, when obtaining repair parts, that the manufacturer of the machine for which they are intended has gained experience with many similar machines in other plants—that he is constantly making improvements in those parts based on this experience—that his shop is equipped with tools specifically for the manufacture of such parts—that he is interested in supplying parts that will assist in obtaining the highest efficiency from the machine itself—that the parts are usually made to templet, making easy changeability—and that many of the parts are patented.

●

F. L. SMIDTH & Co.
225 BROADWAY NEW YORK, N. Y.

Manufacturers of CEMENT MAKING MACHINERY

Designers of CEMENT MANUFACTURING PLANTS

Classified Directory of Advertisers in this Issue of Rock Products

For alphabetical index, see page 2

This classified directory of advertisers in this issue is published as an aid to the reader. Every care is taken to make it accurate, but ROCK PRODUCTS assumes no responsibility for errors or omissions. The publishers will appreciate receiving notice of omissions or errors, or suggestions

Acetylene Welding Rod
American Steel & Wire Co.
Haynes Stellite Co.

Agitators, Thickeners and Slurry Mixers
F. L. Smidth & Co.

Air Compressors
Curtis Pneumatic Machy. Co.
Fuller Co.
Gardner-Denver Co.
Nordberg Mfg. Co.
Traylor Eng. & Mfg. Co.

Air Filters
Fuller Co.

Air Hoists
Curtis Pneumatic Machy. Co.

Air Separators
Bradley Pulverizer Co.
Raymond Bros. Impact Pulv. Co.

Alloys (Metal)
Haynes Stellite Co.

Babbitt Metal
Joseph T. Ryerson & Son, Inc.

Backdiggers
Ohio Power Shovel Co.

Backfillers
Bucyrus-Erie Company
Harnischfeger Corp.
Ohio Power Shovel Co.

Ball Bearings
S K F Industries, Inc.

Balls, Grinding (See Grinding Balls)

Balls (Tube Mill, etc.)
F. L. Smidth & Co.

Bearings
Chain Belt Co.
Haynes Stellite Co.
Link-Belt Co.
Joseph T. Ryerson & Son, Inc.
S K F Industries, Inc.
Timken Roller Bearing Co.

Bearings (Anti-Friction)
S K F Industries, Inc.
Timken Roller Bearing Co.

Bearings (Roller)
S K F Industries, Inc.
Timken Roller Bearing Co.

Bearings (Tapered Roller)
Timken Roller Bearing Co.

Bearings (Thrust)
S K F Industries, Inc.
Timken Roller Bearing Co.

Belt Fasteners
Flexible Steel Lacing Co.

Belt Lacing
Flexible Steel Lacing Co.

Beltting
Robins Conveying Belt Co.

Bins
Blaw-Knox Co.
Traylor Eng. & Mfg. Co.
Universal Crusher Co.

Bin Gates
Chain Belt Co.
Fuller Co.
Link-Belt Co.
Robins Conveying Belt Co.
Traylor Eng. & Mfg. Co.

Blast Hole Drills (See Drills)

Blocks (Pillow, Roller Bearing)
Link-Belt Co.
S K F Industries, Inc.
Timken Roller Bearing Co.

Blocks (Sheave)
American Manganese Steel Co.
Sauerman Bros.

Boilers
Babcock & Wilcox Co.
Combustion Engineering Corp.

Breakers (Primary)
Smith Engineering Works

Buckets (Dragline and Slackline)
Bucyrus-Erie Co.
Sauerman Bros.

Buckets (Dredging and Excavating)
Harnischfeger Corp.

Buckets (Elevator and Conveyor)
Chain Belt Co.
Cross Engineering Co.
Hendrick Mfg. Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Robins Conveying Belt Co.

Buckets (Clamshell, Grab, Orange Peel, etc.)
Blaw-Knox Co.
Harnischfeger Corp.
Hayward Co.
Link-Belt Co.

Bushings (Machined or Processed)
Manganese Steel Forge Co., Inc.

Cableways
American Steel & Wire Co.
General Electric Co.
Link-Belt Co.
Sauerman Bros.
Williamsport Wire Rope Co.

Cap Crimpers and Fuse Cutters
Ensign-Bickford Co.

Car Pullers
Link-Belt Co.
Robins Conveying Belt Co.

Castings
Babcock & Wilcox Co.
Eagle Iron Works (Grey Iron)
Haynes Stellite Co.
Link-Belt Co.
Timken Roller Bearing Co.

Cement Making Machinery
F. L. Smidth & Co.

Cement Pumps
Fuller Co.
F. L. Smidth & Co.

Central Mixing Plants (Concrete)
Chain Belt Co.

Chain (Dredge and Steam Shovel)
Bucyrus-Erie Co.
Jeffrey Mfg. Co.
Manganese Steel Forge Co., Inc.

Chain (Elevating and Conveying)
American Manganese Steel Co.
Chain Belt Co.
Link-Belt Co.

Chain Drives
Chain Belt Co.

Chain Systems (Kilns)
F. L. Smidth & Co.

Chutes
Cross Engineering Co.
Hendrick Mfg. Co.

Chutes and Chute Liners
Manganese Steel Forge Co., Inc.

Chutes for Minimizing Segregation
Robins Conveying Belt Co.

Clamshell Buckets (See Buckets, Clamshell, Grab, etc.)

Classifiers
Knickerbocker Co.
Link-Belt Co.

Clips (Wire Rope)
American Steel & Wire Co.
Williamsport Wire Rope Co.

Clutches
Fairbanks, Morse & Co.

Coal Pulverizing Equipment
Babcock & Wilcox Co.
Bradley Pulverizer Co.
Gruendler Crusher & Pulv. Co.
Pennsylvania Crusher Co.
Raymond Bros. Impact Pulv. Co.
F. L. Smidth & Co.

Compressed Air Rock Drills
Gardner-Denver Co.

Compressed Air Hoists
Gardner-Denver Co.

Compressors (See Air Compressors)

Controllers (Electric)
Fairbanks, Morse & Co.

Conveyor Idlers and Rolls
Bartlett, C. O., & Snow Co.
Chain Belt Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Robins Conveying Belt Co.

Conveyors and Elevators
Earle C. Bacon, Inc.
Chain Belt Co.
Fuller Company
Jeffrey Mfg. Co. (Vibrating)
Lewistown Fdy. & Mach. Co.
Link-Belt Co.
Robins Conveying Belt Co.
F. L. Smidth & Co.
Smith Engineering Works
Traylor Eng. & Mfg. Co.
Universal Crusher Co.

Conveyors (Screw)
Link-Belt Co.

Conveyors (Pneumatic)
Fuller Company

Coolers (See Kilns and Coolers, Rotary)

Correcting Basins
F. L. Smidth & Co.

Couplings (Flexible and Shaft)
Chain Belt Co.
Link-Belt Co.

Cranes (Air Powered)
Curtis Pneumatic Machy. Co.

Cranes (Clamshell)
Bucyrus-Erie Co.
Harnischfeger Corp.

Cranes (Crawler and Locomotive)
Bucyrus-Erie Co.
Harnischfeger Corp.
Link-Belt Co.
Marion Steam Shovel Co.
Ohio Power Shovel Co.

Cranes (Overhead Travelling Electric)
Harnischfeger Corp.

Crusher Parts
Pennsylvania Crusher Co.

Crushers (Hammer)
Dixie Machy. Mfg. Co.
Gruendler Crusher & Pulv. Co.
Pennsylvania Crusher Co.

Crushers (Jaw and Gyratory)
Allis-Chalmers Mfg. Co.
Earle C. Bacon, Inc. (Jaw)
Gruendler Crusher & Pulv. Co.
Lewistown Fdy. & Mach. Co.
Nordberg Mfg. Co.
Pennsylvania Crusher Co.
Smith Engineering Works
Traylor Eng. & Mfg. Co.
Universal Crusher Co.

Crushers (Single Roll)
Jeffrey Mfg. Co.
Link-Belt Co.
McLanahan & Stone Corp.
Pennsylvania Crusher Co.

Crushing Rolls
Babcock & Wilcox Co.
Jeffrey Mfg. Co.
Traylor Eng. & Mfg. Co.

Dedusters
Blaw-Knox Co.

Derricks and Derrick Fittings
Harnischfeger Corp.

Diesel Engines (See Engines, Diesel)

Dippers (Manganese Steel)
American Manganese Steel Co.

Dippers and Teeth (Steam Shovel)
Bucyrus-Erie Co.
The Frog Switch & Mfg. Co.
Marion Steam Shovel Co.

Ditchers
Bucyrus-Erie Co.
Harnischfeger Corp.
Marion Steam Shovel Co.

Draglines
Bucyrus-Erie Co.
Harnischfeger Corp.
Link-Belt Co.
Marion Steam Shovel Co.

Dragline Excavators
Bucyrus-Erie Co.
Harnischfeger Corp.
Marion Steam Shovel Co.
Ohio Power Shovel Co.

Dragline Cableway Excavators
Bucyrus-Erie Co.
Link-Belt Co.
Marion Steam Shovel Co.
Sauerman Bros.

Dragline Excavators (Walking)
Bucyrus-Monaghan Company

Dredge Chain (See Chain)

Dredge Pumps (See Pumps, Dredging)

Dredges
Bucyrus-Erie Co.
Hayward Co.
Marion Steam Shovel Co.
Morris Machine Works

Drilling Accessories
Loomis Machine Co.

Drill Sharpening Machines
Gardner-Denver Co.

Drills
Bucyrus-Erie Co.

Drills (Blasthole)
Bucyrus-Erie Co.
Loomis Machine Co.

Drills, Hammer (See Hammer Drills)

Drills (Rock)
Gardner-Denver Co.

Drives (Short Center)
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.

Dryers
Babcock & Wilcox Co.
Combustion Engineering Corp.
Traylor Eng. & Mfg. Co.

Dust Collecting Systems
Blaw-Knox Co.

Dust Conveying Systems
Fuller Co.

Electric Mine Hoists
Nordberg Mfg. Co.

Electric Power Equipment
Fairbanks, Morse & Co.
General Electric Co.

Elevators (See Conveyors and Elevators)

Engineers
Productive Equipment Corp.
F. L. Smidth & Co.
Robins Conveying Belt Co.

Engines (Diesel)
Fairbanks, Morse & Co.
Nordberg Mfg. Co.

Engines (Gas, Kerosene, Oil)
Fairbanks, Morse & Co.
Wisconsin Motor Corp.

Engines (Steam)
Morris Machine Works

Excavating Machinery (See Shovels, Cranes, Buckets, etc.)

Fans
General Electric Co.

Fans (Exhaust)
Jeffrey Mfg. Co.

Feeders
Babcock & Wilcox Co. (Pulverized Coal)
Chain Belt Co.
Fuller Co. (Cement and Pulverized Material)
Jeffrey Mfg. Co. (Pan and Tube)
Robins Conveying Belt Co.
Smith Engineering Works (Plate)

Flights
Cross Engineering Co.

Forgings (Steel)
Manganese Steel Forge Co., Inc.

Forges (Oil)
Gardner-Denver Co.

Furnaces
Combustion Engineering Corp.

Fuses (Detonating and Safety)
Ensign-Bickford Co.

Fuses (Electrical)
General Electric Co.

Gates, Bin (See Bin Gates)

Gears and Pinions
Chain Belt Co.
General Electric Co.
Link-Belt Co.

Gears (Spur, Helical and Worm)
Jeffrey Mfg. Co.

Generating Sets (Diesel Electric)
Fairbanks, Morse & Co.

Grab Buckets (See Buckets, Clamshell, Grab, etc.)

Grapples (Stone)
Hayward Co.

Grinding Balls
Babcock & Wilcox Co.

Grizzlies
Jeffrey Mfg. Co. (Vibrating)
Manganese Steel Forge Co., Inc.
Productive Equipment Corp.
Robins Conveying Belt Co.
Smith Engineering Works
Traylor Eng. & Mfg. Co.

Grizzly Feeders
Jeffrey Mfg. Co.
Traylor Eng. & Mfg. Co.

Hammer Drills
Gardner-Denver Co.

Hammer Mills (See Crushers)

Hard Facing Materials
Haynes Stellite Co.

Hascrome
Haynes Stellite Co.

Hastelloy
Haynes Stellite Co.



PROTECTING the Receipt and Disbursing of Aggregates

For weighing aggregates at handling plants or wherever they are moved by truck, Fairbanks-Morse Type "S" Motor Truck Scales will be found to be the quickest and most accurate means of weighing. And weighing is sound business, both for insuring proper receipt and use of aggregates as well as an accurate basis for payment where contracts are on a tonnage basis.

Fairbanks Type "S" Scales represent the most advanced engineering prac-

tice in the design of scales for truck weighing. The jarring caused by starting or sudden stopping of trucks on the scale and unequal distribution of load on the scale platform do not result in errors in weighing.

Full data on the exclusive features of the Fairbanks Type "S" Motor Truck Scale may be obtained at your nearest Fairbanks-Morse branch or by writing Fairbanks, Morse and Co., 900 S. Wabash Ave., Chicago, Ill. And 40 principle cities—a service station at each house.

As the Leading Scale Manufacturer

6684 of these Type "S" Motor Truck Scales have been placed in service since 1924. Fairbanks-Morse branches reporting on the service of these scales in 1931 show repair or replacement parts necessary on only one; overhaul without replacement on but six; field adjustments necessary on only nine.

Fairbanks Scales



PREFERRED THE WORLD OVER

6007 SA05.1

Classified Directory of Advertisers in this Issue of ROCK PRODUCTS

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Curtis Pneumatic Machy. Co.
Gardner-Denver Co.
Harnischfeger Corp.
Link-Belt Co.
Sauerman Bros.

Hoppers and Spouts

Hendrick Mfg. Co.
Manganese Steel Forge Co., Inc.

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I-Beam Trolleys

Curtis Pneumatic Machy. Co.

Insulation (Electric)

General Electric Co.

Kilns and Coolers (Rotary)

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F. L. Smidth & Co.
Traylor Eng. & Mfg. Co.
Kominuters (See Mills)

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Flexible Steel Lacing Co.
Lighters (Hot Wire for Safety Fuse)

Ensign-Bickford Co.

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Link-Belt Co.
Raymond Bros. Impact Pulv. Co.

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Locomotives (Diesel)

The Fate-Root-Heath Co.
Plymouth Locomotive Works

Locomotives (Diesel-Electric)

The Fate-Root-Heath Co.
Plymouth Locomotive Works

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Jeffrey Mfg. Co.
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Manganese Steel

Manganese Steel Forge Co., Inc.

Manganese Steel Castings

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Manganese Steel Parts

Manganese Steel Forge Co., Inc.

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Fairbanks, Morse & Co.

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Fuller Company

Link-Belt Co.

Robins Conveying Belt Co.

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Smith Engineering Works

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S K F Industries, Inc.

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Knickerbocker Company.

Raymond Bros. Impact Pulv. Co.

F. L. Smidth & Co.

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Pump Parts

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Pumps (Air Lift)

Fuller Co.

Pumps (Cement)

Fuller Co.

Pumps (Cement Slurry)

Morris Machine Works

F. L. Smidth & Co.

A. R. Wilfley & Sons

Pumps (Centrifugal)

Fairbanks, Morse & Co.

Morris Machine Works

A. R. Wilfley & Sons

Pumps (Drainage)

Fairbanks, Morse & Co.

Pumps (Dredging)

American Manganese Steel Co.

Bucyrus-Erie Co.

Morris Machine Works

Pumps (Pulverized Coal)

Babcock & Wilcox Co.

Pumps (Sand and Gravel)

Morris Machine Works

A. R. Wilfley & Sons

Railway Equipment

General Electric Co.

Railways (Electric)

General Electric Co.

Ready-Mixed Concrete (Truck Mixer Bodies)

Chain Belt Co.

Ready-Mixed Concrete Plants

Blaw-Knox Co.

Road Machinery

Harnischfeger Corp.

Marion Steam Shovel Co.

Rock Drills (See Drills, Rock)

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Traylor Eng. & Mfg. Co.

Rolled Stock (for Liners, Etc.)

Haynes Stellite Co.

Roller Bearings

S K F Industries, Inc.

Timken Roller Bearing Co.

Roofing and Siding (Steel)

Joseph T. Ryerson & Son, Inc.

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Fairbanks, Morse & Co.

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Fairbanks, Morse & Co.

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Fairbanks, Morse & Co.

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Link-Belt Co.

Sauerman Bros

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Bartlett, C. O., & Snow Co.

Chicago Perforating Co.

Cross Engineering Co.

Harrington & King Perf. Co.

Hendrick Mfg. Co.

Jeffrey Mfg. Co.

Link-Belt Co.

Manganese Steel Forge Co., Inc.

Morrow Mfg. Co.

Productive Equipment Corp.

Robins Conveying Belt Co.

Smith Engineering Works

Traylor Eng. & Mfg. Co.

Universal Crusher Co.

Universal Vibrating Screen Co.

Screens (Perforated)

Hendrick Mfg. Co.

Screens, Scalping (Hercules and Standard)

Smith Engineering Works

Screens (Testing)

Hendrick Mfg. Co.

Screens, Vibrating

Jeffrey Mfg. Co.

Link-Belt Co.

Productive Equipment Corp.

Robins Conveying Belt Co.

Smith Engineering Works

Universal Vibrating Screen Co.

Screens, Washing (Hercules, Ajax and Standard)

Smith Engineering Works

Screw, Rewasher (Single and Twin)

Smith Engineering Works

Scrubbers

Knickerbocker Company.

Seal Rings

Traylor Eng. & Mfg. Co.

Separators, Air (See Air Separators)

Separators (Slurry)

F. L. Smidth & Co.

Shovels, Power (Steam, Gas, Electric, Diesel, Oil)

Bucyrus-Erie Company

Harnischfeger Corp.

Link-Belt Co.

Marion Steam Shovel Co.

Ohio Power Shovel Co.

Silos

F. L. Smidth & Co.

Skip Hoists and Ships

Link-Belt Co.

Robins Conveying Belt Co.

Slings (Wire Rope)

American Steel & Wire Co.

A. Leschen & Sons Rope Co.

Williamsport Wire Rope Co.

Sockets (Wire Rope)

American Steel & Wire Co.

Soft Stone Eliminator

Knickerbocker Co.

Speed Reducers

Link-Belt Co.

Traylor Eng. & Mfg. Co.

Spouts, Chutes (See Chutes and Chute Liners)

Spray Nozzles

Binks Mfg. Co.

Sprockets and Chain

Chain Belt Co.

Jeffrey Mfg. Co.

Steel Bars

Timken Roller Bearing Co.

Steel (Bars, Shapes, Plates, etc.)

Joseph T. Ryerson & Son, Inc.

Steel (Electric Furnace)

Timken Roller Bearing Co.

Steel (Open Hearth)

Timken Roller Bearing Co.

Steel (Special Alloy)

Timken Roller Bearing Co.

Steel (Special Analysis)

Timken Roller Bearing Co.

Stellite

Haynes Stellite Co.

Stokers

Babcock & Wilcox Co.

Combustion Engineering Corp.

Storage Equipment

Sauerman Bros.

Tanks

Combustion Engineering Corp.

Link-Belt Co.

Hendrick Mfg. Co.

Track Equipment

Nordberg Mfg. Co.

Track Shifters

Nordberg Mfg. Co.

Tramways (Aerial Wire Rope)

American Steel & Wire Co.

A. Leschen & Sons Rope Co.

Williamsport Wire Rope Co.

Transmission Belting (See Belting)

Transmission Machinery

Timken Roller Bearing Co.

Trippers

Robins Conveying Belt Co.

Troughs

Cross Engineering Co.

Truck Bodies (Ready Mixed Concrete)

Blaw-Knox Co.

Trucks and Trailers (See Motor Trucks)

Truckmixers

Blaw-Knox Co.

Are You Throwing Away Valuable By-Products?

Are you throwing to the winds those by-products which command premium prices?

	With	
STONE		selling at \$1.30
ASPHALT FILLER		selling at \$6.00
AGRICULTURAL LIMESTONE		selling at \$1.50
AIR FLOATED FILLERS		selling at \$6.00
ROCK DUSTING MATERIAL		selling at \$6.00

Only those Crushing Plants equipped with a REAL DUST COLLECTING SYSTEM are in a position to reap these by-product profits.

Let a Blaw-Knox Engineer show you how this can be done. An analysis will not obligate you.

BLAW-KNOX COMPANY
2035 Farmers Bank Bldg., Pittsburgh, Pa.
Offices in principal cities



A typical Blaw-Knox DUST COLLECTOR installation at Muskegon, Mich.

BLAW-KNOX

Dust Collectors

February, 1934

"I'm looking for a
faster drill that
my men can
KEEP USING!"



FIELD

Quarrymen were in need of a faster drill. But they wanted speed PLUS the "easy riding" and dependability that insure a full day's work—every day.

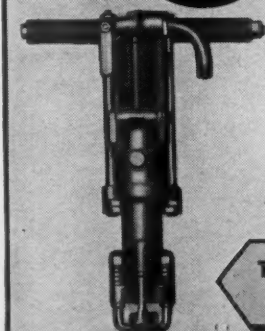
DESIGN

Gardner-Denver had a drill that fit their requirements like a glove—the popular S-55 Sinker. It's the fastest 55-pound drill on the market AND amazingly free from vibration. Perfectly balanced and synchronized valve action makes it far easier to handle. It's built to stay on the job without frequent "time out" for repairs. Remember, too, that the S-55 leaves the hole clean, due to its powerful blowing device.

PRODUCT

You'll get more work done with the S-55 Sinker because Gardner-Denver designed it to fit field requirements. Write for free bulletin describing the S-55 Sinker.

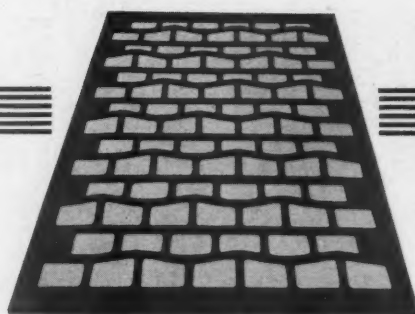
GARDNER-DENVER CO.
104 Williamson St. Quincy, Ill.



THE POPULAR GARDNER-DENVER
S-55 SINKER

GARDNER-DENVER

MAKES AIR DO MORE AND COST LESS



INDENTED VIBRATING SCREEN PLATE

CROSS SCREEN PLATES OF FINEST PERFORATED METAL

FOR VIBRATING, CYLINDRICAL, CONICAL AND SHAKING SCREENS

These plates are available in all sizes of Round, Square and Slot perforations. Users of CROSS screen plates can expect a uniformly larger sizing capacity at lower cost. They will benefit by the greater freedom from blinding, and profit from the longer wear of these superior quality screen plates. CROSS perforated metal screen plates have been used and found exceptionally efficient and economical in every conceivable screening service.

We are always pleased to offer suggestions pertaining to any unusual sizing problem. Modern manufacturing facilities assure a prompt service at reasonable cost. Before ordering your next screen plates—write us.

Our attractive bulletin is free. Ask for it.

CROSS ENGINEERING CO.
CARBONDALE PENNSYLVANIA

ALLIGATOR

TRADE MARK REG. U.S. PAT. OFFICE

STEEL BELT LACING

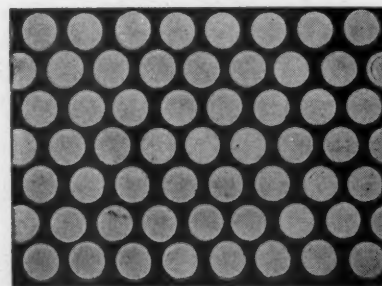
Distinctive Among Belt Lacings

Only Alligator Steel Belt Lacing combines the features of (1) a smooth, flexible, rocking joint (2) great surplus strength (3) preservation of the belt ends and (4) easy, rapid application with a hammer as the only tool. It compresses the belt end in a powerful vise-like grip. No holes to punch. Often lasts the full life of the belt. Suitable for all types of belting. Eleven sizes. Made also in Monel Metal. Sold throughout the world.

FLEXIBLE STEEL LACING COMPANY
4684 Lexington Street Chicago, Illinois
In England at 135 Finsbury Pavement, London, E. C. 2

"NEVER LETS GO"

MORROW SCREEN PLATES



MORROW PERFORATED METAL SCREEN PLATES for sizing and preparing coal, sand, gravel, stone and other bulk materials are made by a Company specializing in screening machinery.

A complete set of punches and dies covering a wide range of sizes, in round, square, oval and diagonal slots are ready for the press, insuring prompt delivery of orders.

*Prices are right.
Send for Bulletin 57.*

The Morrow Manufacturing Co.
Wellston, Ohio

Low Cost Digger
and Conveyor

SAUERMAN

SLACKLINE SCRAPER •



Digs and Hauls 200 to 500 Cubic Yards
Hourly at Cost of Few Cents per Yard—

Only one operator is required for a Sauerman Slackline Scraper and yet this machine will reach out a distance of 1,000 feet and handle thousands of cubic yards per day.

For years there has been rivalry between drag scrapers and slackline cableways as to which was the world's most economical machine for digging and conveying sand and gravel.

The Crescent drag scraper is recognized as having no superior for moving a large yardage of materials from a bank or dry pit while the Sauerman slackline cableway has been first choice for under-water excavating.

Now comes the Sauerman Slackline Scraper which has all the good points of both the drag scraper and the slackline cableway and possesses a larger handling capacity than either.

Every producer who is interested in obtaining increased daily production at minimum operating cost should investigate this new equipment. Write for further details and at the same time tell us about your material-handling problem.

SAUERMAN BROS., 430 S. Clinton St., CHICAGO

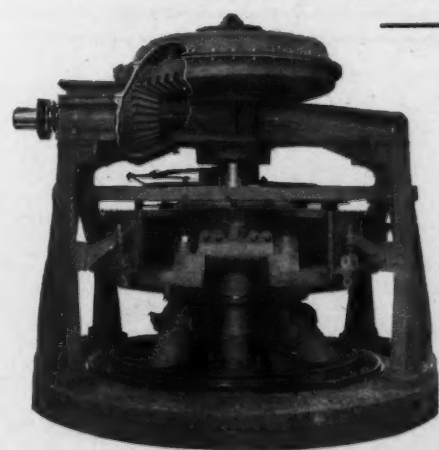
PULVERIZERS and AIR CLASSIFIERS

for the production of

CEMENT, LIMESTONE, GYPSUM, COAL, etc.

The BRADLEY LINE offers the producer an installation for practically every pulverizing problem, assuring the ultimate in capacities and finenesses.

The distinguishing features of BRADLEY MILLS are **low maintenance costs** and **low power consumption**.



BRADLEY HERCULES MILL

—SAVE!—

The addition of an Air Classifier to any pulverizing system will show material savings, increasing capacities up to 70%, reducing power consumption 15 to 20%.



CAPACITIES: 1 to 60 TONS PER HOUR

FINENESSES: 20 to 350 MESH

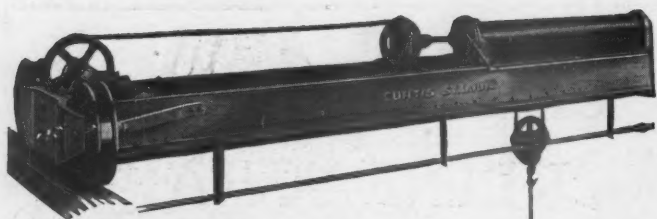
BRADLEY
PULVERIZER CO. **Y**

Boston

London

Works: ALLENTOWN, PA.

European Mfr.—Etablissements Fernand Poltte, Paris



SAVE ½ ON YOUR ORIGINAL CRANE COST

SAVE AGAIN ON THE COST OF OPERATION

HUNDREDS of users of Curtis Air Powered Cranes save the cost of their crane installations the first year. Some report annual savings of two to three times the cost of their Curtis equipment.

The reasons for these remarkable savings are: 1. Curtis Air Powered Cranes cost only half as much as electric cranes in the beginning;—2. they continue to save by requiring practically no repair. 3. They are so simple that common labor can operate them.

In every type of plant where cranes are used, Curtis Cranes give star performance. They do everything that any other crane can do; and some things that no other powered crane can do as well, or at so low a cost.

If you are thinking about a crane, or if you are interested in low production costs, investigate the Curtis.

CONSTRUCTION—

Curtis Air Powered Cranes are available in capacities from 500 pounds to six tons; and in spans from 12' 6" to 45'. Ends are pressed steel for maximum strength and minimum weight. Long wheelbase, large diameter wheels, and flexible roller bearings in both Crane and Trolley wheels assure easy movement.

PERFORMANCE—

Curtis Air Powered Cranes handle loads smoothly. Speed is variable and can be controlled. Spots to a hair's breadth. Can't be damaged by overloading. Can't be hurt by heat, fumes, moisture or dust. Requires practically no repairs. Simplicity reduces losses from production interruptions. Operated by common labor.

CURTIS PNEUMATIC MACHINERY COMPANY
1988 Kienlen Avenue, St. Louis, Mo.
5518AI Hudson Terminal, New York City

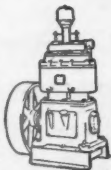
CURTIS

**COMPRESSORS
AIR HOISTS**

I-BEAM CRANES and TROLLEYS

CURTIS COMPRESSORS

3 to 50 h. p. capacity up to 250 cu. ft. per minute. Water-cooled, "centro-ring" lubrication, higher speeds, controlled temperature head, low oil consumption, less carbon precipitation. Timken Bearings, less friction.



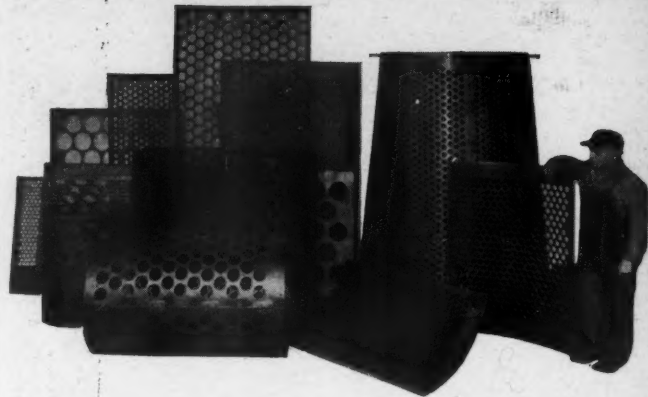
CURTIS AIR HOISTS

Lowest cost power hoist. Laborer can operate. Nothing to get out of order. Fewer production interruptions. Proof against dust, heat and moisture. ½ to 10 ton capacity.



SCREENS

of Perforated Metal



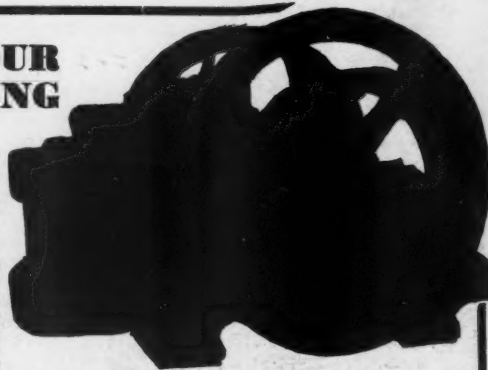
For Sand, Gravel, Stone and Ore. Perforations of all standard types, also of unusual sizes and layouts to give large production and reduced screening costs.

The
Harrington & King
PERFORATING CO.

5650 Fillmore St., Chicago, Ill. 114 Liberty St., New York, N. Y.

CUT YOUR CRUSHING COST

MANY an operator is cutting his crushing costs and maintaining production schedules with this most dependable crusher. Simple but sturdy, this efficiently designed crusher represents an exceptionally profitable investment in equipment of this type.

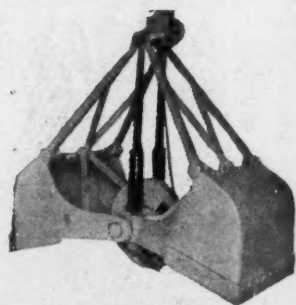


Lewistown Foundry & Machine Company
LEWISTOWN, PENNA.

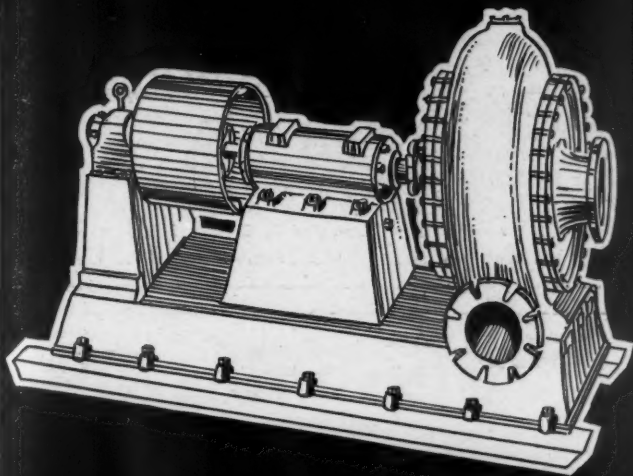
The Hayward Class "E" Clam Shell Bucket grabs capacity loads every time and carries swiftly without spilling to a clean, free discharge. Bulletin 650 gives complete information.

THE HAYWARD COMPANY
202-204 Fulton St., New York, N. Y.

Hayward Buckets



Equip For Cheaper Production!

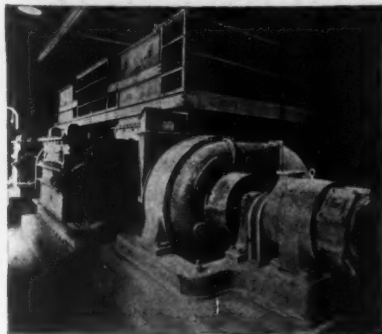


You can better meet competition with a correctly equipped plant—correctly equipped with the latest high volume, long wearing AMSCO Manganese Steel Pump. Let our time trained engineers confer with you on your pump requirements.

AMERICAN MANGANESE STEEL COMPANY
CHICAGO HEIGHTS, ILLINOIS

Foundries and Sales Offices in Principal Cities

"PENNSYLVANIA" STEELBUILT HAMMERMILLS



Put Your Reduction Problems Up to Us

installed in the largest Cement Plant in the British Empire. Five other plants of the same Company are "Pennsylvania" equipped.

PENN-PRIMARY Hammermills, PENN - LE-HIGH PRIMARY ROLLS, PENNSYLVANIA - BU-CHANAN Jaw Crushers, "PENNSYLVANIA" Secondary and Fine Reduction Hammermills meet every raw side-crushing need.

Unbreakable Steel Construction
Positive Tramp Iron Protection

PENNSYLVANIA
CRUSHING COMPANY

Liberty Trust Bldg.
PHILADELPHIA

New York Pittsburgh Chicago

MANGANESE STEEL CASTINGS

for the

Rock Products Industry

On Your Next Inquiry Specify

"INDIAN BRAND"

Known For Its Superior Shock
and Wear Resisting Qualities.

The Frog, Switch & Mfg. Co.
Established 1881 Carlisle, Pa.

Eliminator with Cover
Plate Removed



KNICKERBOCKER Soft Stone Eliminator

Makes a better product of what you take from the pit. Enables you to open markets you could never reach before. Does its work efficiently and at low cost. Ask us for details.

The Knickerbocker Company, Jackson, Mich.

TODAY

YOU MUST HAVE

THE LOWEST COSTS POSSIBLE!

ROL-MAN Double Lock Mesh Manganese Steel SCREENS

Assure You *Lowest* Screen Cost

Long Life in severe service is a matter of course—the flat surface with just enough roughness to turn over the material gives *high capacity*—accurate openings insure *accurate grading*.

New Low Prices are now effective on *ROL-MAN*, the *World's Highest Grade Screen*

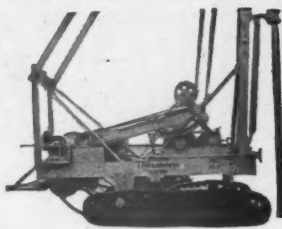
MANGANESE STEEL FORGE COMPANY
Richmond St. and Castor Ave. Philadelphia
Wear Plates, Pins, Bushings, Welding Rods, Buckets.

MAKE DRILLING PAY THE "LOOMIS CLIPPER" WAY

This means drilling jobs pay bigger profits because the new type Loomis Clipper Drill is a better outfit. They give you more footage and their great durability reduces maintenance to a minimum. Something really outstanding in drills.

Write for full details.

Established 1842



THE LOOMIS MACHINE CO. E Street
Tiffin, Ohio

STEEL

IMMEDIATE SHIPMENT FROM STOCK FOR
MAINTENANCE AND REPAIR

When steel is needed in a hurry . . . you can depend upon Ryerson for quick action. Complete stocks of all steel products including bars, plates, sheets, structurals; bolts and nuts, rivets, boiler fittings, chain, etc. Order from the nearest plant. Joseph T. Ryerson & Son, Inc., Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

RYERSON

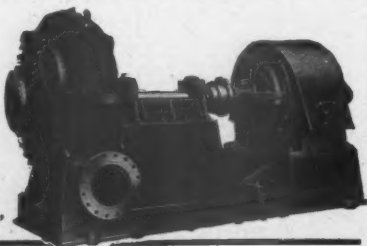


MORRIS CENTRIFUGAL PUMPS

For hydraulic dredging, filling, sand and gravel production, hydraulic conveying of slurry and other liquids containing abrasive materials, clear water pumps for general service. Also complete dredges with all accessory equipment. Dredging pump designs include heavy-duty types and special alloy parts for severe service. Types and sizes for the largest or smallest operations, and belt, motor, steam, oil or gasoline-engine drive.

Write for Bulletins

Morris Machine Works
Baldwinsville, N. Y.
Export Office: 30 Church St.,
New York City



QUALITY MACHINERY BUILT BY NORDBERG

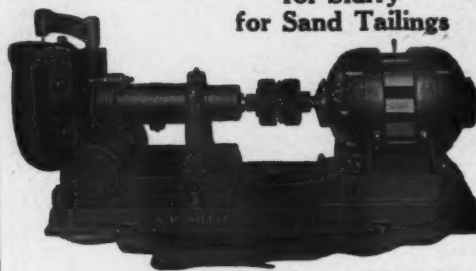
Crushers for Ore and Rock
Diesel and Steam Engines — Hoists
Compressors — Underground Shovels
Railway Maintenance Machinery

Write for Descriptive Literature

NORDBERG MFG. CO.
MILWAUKEE, WIS.

WILFLEY Centrifugal SAND PUMP

PATENTED
for Slurry
for Sand Tailings



ELIMINATION of stuffing box has done away with many troubles common to centrifugal pumps. Pump maintains extraordinary efficiency. Pumping parts unusually heavy, insuring long life. Cleaning out pump or changing wearing parts requires only a few minutes.

Described and illustrated in Catalog No. 8

A. R. Wilfley & Sons, Inc., Denver, Colo., U. S. A.

ALLIS-CHALMERS

NON-CHOKING TYPE CONCAVES

HAVE IMPROVED CRUSHER—OPERATION FOR
OTHER USERS . . . Why not for you?



Our non-choking concaves have been designed along lines dating back through many years of experience with GATES AND McCULLY CRUSHERS and our designs do not infringe any valid claims of any patent.

ALLIS-CHALMERS MANUFACTURING CO.
MILWAUKEE, WIS. U.S.A.

Perforated Metals — Screens of
All Kinds — For Sand, Gravel,
Stone, Etc.

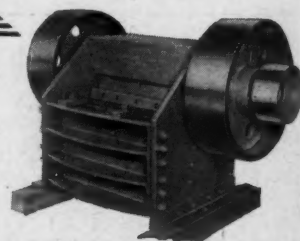
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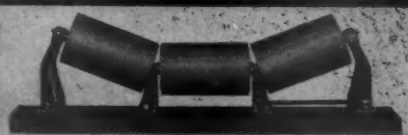
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60-ton Porter 6-wheel saddle tank.
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Cranes, Asphalt Plants, Draglines,
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Jaw Crushers 10x18, 15x36, 18x30.

J. T. WALSH
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FOR SALE

Farrell Jaw Crusher, type B, 18x36.
Reliance Jaw Crusher, 9x16, with 30' bucket elevator.
Jeffrey No. 3 Comb. Lime Crusher and Pulv.
80' Belt Elevator with 140 30" buckets.
S-A Belt Conveyor, 20" wide, 130' long.
S-A Belt Conveyor, 32" wide, 80' long.
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American 4" centrif. pump to 15 HP. gas eng.
Lawrence 8" centrif. two-stage pump, 150 HP. A. C. motor.
170'—32" wide 12-ply rubber-covered belt.
80 HP. Farquhar Locomotive Boiler, 150 lbs. pressure, new 1931.
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1-Yd. Osgood Crawler Shovel, rebuilt.
Side and Center dump cars.
Locomotives—75-ton Switcher, code boiler
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Cranes and Draglines, various sizes.

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3-inch Centrifugal Pump, direct connected to a 5-horse air-cooled engine, mounted on truck.

8-inch Amsco Dredge Pump, belt driven.

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THESE columns offer you the best medium in the rock products industry for the sale, exchange and purchase of used equipment, rock, quarry and gravel-pit property; the circulation and buying influence of Rock Products extends beyond those now actually engaged in operating plants; it includes mining engineers and capitalists who may be reached through no other medium, because of Rock Products' world-wide reputation as the *business journal* of the rock products industry.

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PROMINENT MANUFACTURER HAS opening for man with experience in the sale of lime plant equipment. Applicants must have engineering training and experience in the operation of hydrate lime plants. Apply box number 608, care of Rock Products, 330 South Wells St., Chicago, Ill.

CONSOLIDATED offers GOOD USED CRUSHING, PULVERIZING, DRYING AND FILTERING EQUIPMENT—COMPLETE

Crushing Plants; Diesel, Gasoline, Electric Cranes and Shovels; Hoists; Compressors; Pumps; Dragline and Excavating Equipment; and all sizes and types of Jaw, Gyrotory and Roll Crushers; Swing Hammer Mills; Elevators; Belt Conveyors; Rotary and Vibrating Screens; Rotary Kilns and Dryers; Raymond and other fine Pulverizers; Air Separators; Hardinge Ball and Pebble Mills; Silos and iron lined Tube Mills, etc. Send for Bulletin No. 14.

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POSITIONS WANTED

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